THE DETERMINANTS AND CONSEQUENCES OF ECONOMIC VULNERABILITY AMONG URBAN ELDERLY NIGERIANS

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Abstract

In rapidly urbanising Sub-Saharan African contexts, not much is known about the economic vulnerability of elderly people and its consequences. Dominant international institutions have indicated that the economic situation of elderly people in developing countries is precarious, especially where high levels of poverty and minimal social safety nets are the norm. As a consequence, the impact of economic vulnerability can be quite punishing on disadvantaged households with an ageing elderly person. Yet, the case of urban elderly Nigerians has thus far remained largely unresearched. This thesis represents a quantitative investigation of economic vulnerability amongst urban elderly Nigerians and its health-related consequences, examined through a consumption allocation welfare measure. It draws on economic, gerontological, and sociological perspectives to undertake this task.

The key drivers of economic vulnerability and resulting consequences are likely to be complex and varied. Urban Elderly Nigerians may be economically vulnerable because they possess certain pre-disposing characteristics. This study is concerned with investigating these associated determinants of economic vulnerability amongst urban elderly Nigerians using a recent nationally representative household survey—the Nigerian General Household Panel Survey (NGHPS), which was collected by the National Bureau of Statistics in 2010. The first part of the study examines the determinants of economic vulnerability, through the use of a consumption allocation model.

The findings of this study reveal that the age of the household head, household size, household structure, and regional location, are key determinants of economic vulnerability amongst urban elderly households in Nigeria. As a consequence, does economic vulnerability (represented by consumption allocation) influence health status and spending amongst elderly Nigerian households? I extracted useful data from the NGHPS to address this pertinent question. This is the second part of the study. The findings suggest that economic vulnerability is strongly related to health status and health spending. This thesis highlights key methodological challenges in using a secondary data source to study economic vulnerability amongst elderly people in a developing country context. The study also offers some policy options to tackle economic vulnerability among elderly households in urban Nigeria, and its health-related consequences.

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List of Abbreviations

ADL	ACTIVITIES OF DAILY LIVING
DV	DEPENDENT VARIABLE
DS	DEMOGRAPHIC SEPERABILITY
EV	ECONOMIC VULNERABILITY
FOS	FEDERAL OFFICE OF STATISTICS (NOW NATIONAL BUREAU OF STATISTICS)
FHH	FEMALE HEADED HOUSEHOLDS
GDP	GROSS DOMESTIC PRODUCT
HAI	HELPAGE INTERNATIONAL
HH	HOUSEHOLD
ILO	INTERNATIONAL LABOUR ORGANISATION
IMF	INTERNATIONAL MONETARY FUND
LCH	LIFE-CYCLE HYPOTHESIS
MHH	MALE HEADED HOUSEHOLDS
MDG	MILLENNIUM DEVELOPMENT GOALS
MIPAA	MADRID INTERNATIONAL PLAN OF ACTION ON AGEING
NBS	NATIONAL BUREAU OF STATISTICS, NIGERIA
NE	URBAN NON-ELDERLY HOUSEHOLDS
NEC	NOT EASILY CLASSIFIED
NGHPS	NIGERIA-GENERAL HOUSEHOLD PANEL SURVEY
NMEC	NATIONAL COMMISSION FOR MASS LITERACY
NPC	NATIONAL POPULATION COMMISSION
OECD	ORGANISATION OF ECONOMIC CO-OPERATION AND DEVELOPMENT
OER	OUTLAY EQUIVALENT RATIOS
OLS	ORDINARY LEAST SQUARES
OOP	OUT-OF-POCKET
PENCOM	NATIONAL PENSION COMMISSION
PIH	PERMANENT INCOME HYPOTHESIS
PL1	POVERTY LINE (BASED ON $1.25/DAY)
PL2	POVERTY LINE (BASED ON OFFICIAL MEASURES OF TWO-THIRDS OF EXPENDITURE)

SD	**STANDARD DEVIATION**
SE	**STANDARD ERROR**
SRHS	**SELF-REPORTED HEALTH STATUS**
SSA	**SUB-SAHARAN AFRICA**
UE	**URBAN ELDERLY HOUSEHOLDS**
UN	**UNITED NATIONS**
UNDP	**UNITED NATIONS DEVELOPMENT PROGRAMME**
UNFPA	**UNITED NATIONS POPULATION FUND**
WB	**WORLD BANK**
WHO	**WORLD HEALTH ORGANISATION**

1. Introduction

A significant proportion of older people in developing countries are largely economically disadvantaged yet many older people are often excluded from social protection programmes. In Europe, retired older people have greater access to well-functioning social pension schemes as a reliable source of income[1] (Walker and Foster, 2014). Whereas their counterparts in Sub-Saharan Africa (SSA)—with the exception of Southern African countries (Niño-Zarazúa et al., 2012;Devereux and White, 2010)[2]—lack sufficient social security arrangements to mitigate economic vulnerability during old age.

Nonetheless, the key drivers of economic vulnerability and resulting consequences are likely to be complex and varied. Contrary evidence in developed and developing countries suggests that social pensions on its own are not sufficient. For instance, in OECD (Organisation of Economic Co-operation and Development) countries, older people are covered by effective social protection systems, yet older people have higher poverty rates than their younger counterparts (UN, 2013b;Walker and Foster, 2014). This complexity is further heightened by the inherent difficulties in untangling economic vulnerability among older groups in SSA states with high levels of poverty (Kakwani and Subbarao, 2005b;UN, 2013b). It is a well-known fact that high poverty rates are characteristic of many SSA states including Nigeria. Much of SSA is poor, with about 1.2 billion people living on less than $1.25 a day in developing countries; and 47.5% of this estimated figure residing in Sub-Saharan Africa.[3] Although, globally, poverty rates tends to be higher among older people than other age groups (UN, 2013b;UNFPA and HAI, 2012).

Context-specific evidence in these high poverty settings reveals that in the absence of social protection schemes, many older people remain in work throughout their life span. According to the United Nations (UN), it is estimated that 40% of older people in SSA are economically active. This old-age labour participation rate in SSA is relatively high, compared to the estimate of 7% in Europe (UN, 2013b, p.50). As the UN's 2013 report further notes, many older people in SSA have no choice but to work, if they are to overcome economic vulnerability in old-age.

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[1] As Walker and Foster (2014) note, most welfare states in Europe have relatively higher government social security expenditures for retired older people; however, the authors warn that this does not mean that all welfare societies consider expenditures on older people to be a priority as some countries, especially Britain, have been acting to reduce the cost of pensions over the years. In other countries such as Italy and France, expenditures are projected to increase more significantly (p.548-549).

[2] These recent studies have shown that existing non-contributory pensions in Southern Africa have helped to reduce old-age poverty Niño-Zarazúa, M., Barrientos, A., Hickey, S. & Hulme, D. 2012. Social Protection in Sub-Saharan Africa: Getting the Politics Right. *World Development,* 40**,** 163-176, Devereux, S. & White, P. 2010. Social protection in Africa: Evidence, politics and rights. *Poverty & Public Policy,* 2**,** 53-77, Barrientos, A. 2007b. Introducing basic social protection in low-income countries: Lessons from existing programmes. *Brooks World Poverty Institute Working Paper.*.

[3] PovCalNet (World Bank); accessed May 2015.

The importance of understanding the key drivers of economic vulnerability in old age cannot be disputed. Its emergence as a pressing developmental issue in SSA is indicative of a recognition that older people are an under-researched group and that there is much that we do not know about the needs and characteristics of older people in developing countries. Regrettably, dominant international development concerns for older people in much of SSA tend to view older people as one homogenous group and assume that inequalities among older populations do not matter (Aboderin, 2010). These two assumptions have influenced how older people have been predominantly studied by research commissioned by dominant international institutions, especially the UN.

In Nigeria, the government has rightly identified that there are certain important socio-economic and demographic characteristics which differentiate older people from each other (NPC, 2003). In the government's only report on elderly Nigerians entitled, *'The Elderly'*, published by the National Population Commission in 2003, older people were described as a diverse group. This current thesis is concerned with investigating the socio-economic and demographic characteristics that may explain why some older people in Nigeria are likely to be more economically vulnerable than others. This possible explanation, that there are other socio-economic factors driving economic vulnerability, besides poverty rates and old-age pensions motivate the investigation of the determinants of economic vulnerability.

Since the early 1980s, the UN has sought to understand the material needs of elderly people, as well as to globally raise awareness of ageing issues. This UN-led advocacy is an enterprise that has spanned over four decades with some successes. In 1982, the World Assembly of Ageing in Vienna was held, with a special focus on the human rights of older people. This first event produced the United Nations Principles for Older Persons (UN, 1991). For the next 20 years, the human rights framework directed much of the international concerns of ageing. Aboderin (2010, p.408) has termed it the 'advocacy-oriented discourse', due to its tendency to underpin modern ageing issues in SSA to international development agendas.

In 2002, the UN began to hold a broader outlook; in April of the same year, the Second Assembly of Ageing was held. This second event established the Madrid International Plan of Action on Ageing (MIPAA), which had two new objectives: to raise awareness of emerging old-age issues and to galvanise 159 governments to take policy action in their respective countries. MIPAA identified poverty and a lack of social protection as key issues in old-age in the 21st century, especially in developing countries. This development re-energised the UN's efforts to understand the material aspects of old-age, which is in line with a parallel global concern to achieve the Millennium Development Goal (MDG) 1; this goal is to eradicate

poverty and hunger by 2015[4] and to achieve its vision for a society for all ages. The goal states, 'Where poverty is endemic, persons who survive a lifetime of poverty often face an old age of deepening poverty' (UN, 2002, p.45). A decade later, drawing on a compelling body of evidence, the concern that older persons are vulnerable is echoed in a landmark report, Ageing in the Twenty-First Century: A Celebration and A Challenge, published by the UNFPA and HelpAge in 2012.[5] In the UNDP Human Development Report 2014, *Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience,* children, adolescents, and *older people* are defined as inherently vulnerable (UN, 2014, p.1).

Without doubt, the UN and HelpAge International[6] have both been effective in positioning older people as a vulnerable group in national and international development agendas; and Nigeria is a fitting example of a developing country whose ageing policy has been swayed by the influence of the UN. For instance, the *UNDP 2008/2009 Human Development Report* on Nigeria made a special case for older people with this statement: 'the elderly are a subgroup of the poor who are unable to take advantage of income-earning opportunities or who may be adversely affected by policies' (UNDP, 2009). This heavy slant on advocacy and the UN's visible influence on the ageing policy concerns in SSA has been severally criticised in African gerontological literature (Aboderin and Ferreira, 2008;Aboderin, 2010). Some of these criticisms are unwarranted, considering that without this body of knowledge on older people in SSA, studies of older people in much of SSA will be virtually non-existent. Understanding the material needs of older people to prompt policy action has been a mainstay of dominant international concerns rather than African gerontological researchers.

This chapter will situate the thesis within the broader context of old-age vulnerability. In the next section, I discuss the urban context of the study. I also present the rationale for the research, the study's research questions, and the structure of the rest of the thesis. In this thesis, I use the terms '*elderly people', 'the elderly', and 'older people'* to refer to individuals in the later life stage. It particularly refers to individuals 50 years of age and above. Many of the studies on older Africans discussed in this thesis utilise a Westernised notion of old age: typically 60 or 65 years of age and above. I further critique this convention and discuss this thesis' departure from this Westernised old-age definition in Chapter 4. This thesis identifies immediate determinants of economic vulnerability by using a multi-disciplinary approach. As

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[4] In 2000, the Millennium Development Goals were articulated as eight quantifiable international development goals signed by 189 countries of the United Nations with a target date of 2015.

[5] http://www.helpage.org/resources/ageing-in-the-21st-century-a-celebration-and-a-challenge/

[6] HelpAge International is a global organisation that 'helps older people claim their rights, challenge discrimination, and overcome poverty, so that they can lead dignified, secure, active, and healthy lives'. Source: http://www.helpage.org/.; accessed May 2015.

described by Hulme and Toye (2013), a cross-disciplinary stance is multidisciplinary rather than interdisciplinary because it draws on relevant concepts in different disciplines. In this case, the study draws on three disciplines: economics, sociology, and gerontology. However, the main empirical work in the study is quantitative.

1.1 The Setting: Economic Vulnerability and Ageing Policy Concerns

In the previous section, I briefly highlighted the predominance of old-age poverty as a 'vulnerability' concern in the international development domain. Typically, a person is considered poor if his or her income or consumption falls below a pre-defined minimum threshold required to meet basic needs[7]. In Nigeria, poverty is commonly used to ascribe economic vulnerability for the whole population rather than specific groups (Appleton et al., 2008;Anyanwu, 2011;Sala-i-Martin, 2006;Anyanwu, 2014).

The two academic studies that documented poverty among older people in comparison to younger groups in Nigeria are somewhat dated: Ogwumike and Aboderin (2005) found that the poverty headcount for elderly people ranged from 68% to 71% (45 years of age and above) compared to 37% to 65% for individuals ages 15-44[8]; and in 9 of the 15 countries Kakwani and Subbarao (2005b) studied, including Nigeria, they found that households with elderly individuals had higher levels of poverty compared to non-elderly households—these differences were significant at the 5% significance level. One possible reason for the lack of applied empirical work on old-age economic vulnerability in Nigeria is that poverty has often been viewed as a national issue by policymakers which demands blanket approaches in its eradication (Anyanwu, 2014).

Reducing poverty is a pressing concern for many SSA countries. It is a concern that has been successfully perpetuated by international pressures on policymakers in SSA to achieve the UN's MDG 1 target by 2015. Furthermore, the contents of the various Poverty Reduction Strategies (PRS) in most SSA countries including Nigeria are indicative of the influence that institutional institutions such as the World Bank and the United Nations have had on the national development concerns in many SSA states (Aboderin, 2010;Adésínà, 2009;Hickey, 2013, 2012).

On the other hand, this influence of the international development agenda on old-age concerns in SSA has had a varying amount of successes. Over the years, the UN and HelpAge International have built a strong body of evidence on older people in SSA primarily from a

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[7] http://go.worldbank.org/77LE4ON4V0 accessed May 2015
[8] Besides the study being dated, recent evidence in Appleton et al. (2008) has shown that the poverty estimates in this study are faulty.

'vulnerability' angle (Gorman, 2004;UNFPA and HAI, 2012;HAI, 2003, 2002;Ewing et al., 1999;Kakwani and Subbarao, 2005b). Aboderin (2010, p.408-411) reviewed the body of evidence accumulated by the UN and HAI and summarised the two main types of evidence in this knowledge base which underpin the main advocacy arguments: 1) evidence on old-age vulnerability to poverty, illness, and declining family support and (2) older people as care-givers and income-earners in the aftermath of HIV/AIDS[9].

Despite the commitment of the UN to create a 'society for all ages'[10], its ageing policy framework, MIPAA, has had less traction in SSA states compared to the wide-spread acceptance of its MDGs. In 2003, to comply with the international resolution on ageing as specified in the UN's MIPAA, it encouraged the African Union to set up an Africanised version of MIPAA, referred to as, the African Union Policy Framework and Plan of Action on Ageing. The *raison d'être* of the African Union's ageing policy framework was to encourage African countries to take ownership of MIPAA by instituting a National Policy on Ageing in their respective countries.

Two African gerontological experts, Isabella Aboderin and Monica Ferreira have been less than impressed. In their published articles—Aboderin (2010) and Aboderin and Ferreira (2008)— the authors severally criticised the MIPAA policy provisions as ambiguous and unrealistic of resource-scarce global South[11] contexts. These authors take a critical reflective stance to highlight the tensions and conflicts between MIPAA and national development agendas in SSA; and the policy impasse in countries that are yet to implement ageing policies. I discuss these criticisms in Chapter 3. Of relevance here is an emphatic point made by Aboderin and Ferreira. In their view, the UN's assumption that Sub-Saharan African countries and their older citizens are homogenous has hindered the successful implementation of ageing policies in SSA states (Aboderin and Ferreira, 2008).

Nigeria is a country that is yet to implement its ageing policy. Its population size of 13.7 million people aged 50 years and above (Velkoff and Kowal, 2007) puts it in the spotlight in the UN's quest to address the needs of older people in SSA. Clearly, a knowledge gap exists in understanding the constraints impeding the implementation and success of an ageing policy within a Nigerian context. One contribution of this thesis is to highlight these constraints from a

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[9] In the literature, the second aspect has now been expanded to highlight the positive role of older people as change agents in national development (Aboderin, I. 2012b. Ageing Africa: opportunities for development. *Global Population Ageing: Peril or Promise?,* 161**,** 69, Giddens, A. 2009. Sociology (6th edition). Cambridge: Polity Press, Maharaj, P. 2012. *Aging and Health in Africa*, Springer Science & Business Media.

[10] This phrase articulated the vision of the UN in its Madrid Plan. See UN 2002. Report on the Second Assembly of Ageing. *In:* Nations, U. (ed.). New York.

[11] This a convenient term often used in the literature to describe developing countries, while the global North refers to developed countries.

political economy of ageing perspective within a Nigerian context. Elsewhere, the commentaries on the political economy of ageing have particularly been useful in understanding the interaction of economic and political forces in determining resource allocations to older people in the policy sphere (Johnson et al., 2005a;Estes, 2001), although many of these commentaries have primarily focused on Western states (see Walker and Foster, 2014;Estes et al., 1979;Schulz, 2010;Esping-Andersen, 2013).

For the staunch critics of MIPAA, at the heart of the matter is that SSA states and their older populations are heterogeneous. These socio-economic differences need to be understood to aid the design of policy solutions that help foster opportunities and minimise constraints in later life. Therefore, any study of older people in SSA ought to recognise that these unique characteristics of older groups contradict the assumption that all older people are equally vulnerable. But, what does it mean to be vulnerable? The origin of the term 'vulnerability' needs to be explained. In addition, what does it mean for an older person to be economically vulnerable? I briefly address these questions in the subsumed paragraphs.

At the outset, the UN was not the first organisation to propagate the term 'economic vulnerability' in the international development agenda. The World Bank introduced the concept of vulnerability in its 2000/2001 World Development Report. The report stated that 'vulnerability measures the resilience against a shock—the likelihood that a shock will result in a decline in wellbeing' (World Bank, 2001, p.139). This 'shock' is often viewed as being economic and something external that one has no control over (Calvo and Dercon, 2005;Dercon, 2001). A shock can also be health-related, for instance, an unexpected chronic illness (Wagstaff, 2007).

Since the World Bank's 2000/2001 report, the field of economics and its sub-discipline, development studies, have attempted to conceptualise and operationalise vulnerability among individuals and households (Chambers, 2006;Dercon, 2001;Barrientos, 2007a;Calvo and Dercon, 2005). In economics, the academic concern has been focused on using econometric models to assess and measure economic vulnerability by modelling economic shocks in developing countries on an aggregate level. On the other hand, development studies have often focused on developing conceptual frameworks of vulnerability rather than using econometric models to study economic vulnerability on a micro-economic level (Moser, 1998;Chambers, 2006). In gerontology, conceptual frameworks of vulnerability draw on ideas from development studies to gather qualitative evidence on old-age vulnerability (Grundy, 2006;Schröder-Butterfill and Marianti, 2006;Schröder-Butterfill, 2006). In the sub-discipline of quantitative sociology, there have also been a few applications of economic vulnerability among groups in

European settings (Gesthuizen and Scheepers, 2010;Maitre et al., 2012;Whelan and Maître, 2005).

In recent years, the UN has embraced the multi-dimensional nature of vulnerability as a vital ingredient to human progress, and it has continued to identify older people as a vulnerable group along with women and children. In the early 2000s, the UN's Development Policy and Analysis Division developed a different approach to economic vulnerability by developing an Economic Vulnerability Index (EVI) to identify least developed countries based on certain criteria. Some criterion examples are population size and natural resources (Guillaumont, 2010;Cariolle, 2011;Guillaumont, 2011). Much of this dominant concern on economic vulnerability has been through a macro-economic lens to promote international development.

In contrast, the UN-led advocacy-oriented literature on older people which has been led by two of its departments: the UNDP (United Nations Development Programme) and UNFPA (United Nations Population Fund), ascribe the term 'vulnerability' to 'something'. Some examples are vulnerability to poverty, ill-health, and so forth (UNFPA and HAI, 2012;UN, 2013b). Although, going by its recent 2014 report, it would seem that the UN is beginning to adopt the term vulnerability as a stand-alone concept.

The UN views vulnerability as the new paradigm for achieving the human development goals which can be found in its 2014 report, *Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience.* In the same report, it strongly argues that 'an account of progress in human development is incomplete without exploring and assessing vulnerability'. The report's theoretical underpinning is based on Sen's (1993) capability approach, which defines 'capabilities, choices, and freedoms' as 'determinants of human vulnerability' (UN, 2014, p.1-23).

This new direction may have been influenced by the growing debate in international policy circles on the reasons why much of SSA has failed to achieve its MDG targets. One of the main recommendations in the academic literature is that the lack of a multi-dimensional and dynamic perspective in the MDG agenda has weakened its impact (see Camfield et al. (2013) for a comprehensive discussion). This report may be fairly new, but the UN's pervasive influence in shaping dominant development concerns in the South is indicative of the future directions of research on vulnerability of older people.

In the academic literature, the term 'economic vulnerability' lacks a universal definition (Alwang et al., 2001). In the United States, economic vulnerability among older people is viewed as 'having an income that is less than two times the supplemental poverty threshold'

(Gould and Cooper, 2013). However, this definition is similar to poverty studies which estimate static poverty rates or poverty status using pre-defined thresholds, as can be seen in studies by (Barrientos et al., 2003;Kakwani and Subbarao, 2005b;Gasparini et al., 2007).

Vulnerability theorists are adamant that vulnerability differs from poverty. According to Chambers (2006), vulnerability is not the same as poverty because it comprises of two sides: 'an external side' comprising of 'risks, shocks, and stress' and 'an internal side' characterised by a lack of coping mechanisms. In a comprehensive review by Alwang et al. (2001), the authors found that in various disciplines, vulnerability is often viewed as being a multi-faceted and forward-looking concept, which often includes a notion of risk or harm, following an unforeseen catastrophic event.

Interestingly, these vulnerability frameworks were often developed with developing countries in mind. In my view, 'theories' of vulnerability may be conceptually sound, but as an applied concept, the frameworks do not realistically consider data limitations in developing country contexts. Assessing vulnerability requires multi-year data such as panel or longitudinal data, which is a huge constraint in many developing countries. Household datasets in much of SSA are typically cross-sectional in nature and tend to capture quantitative data at a household level. This is an issue that has been highlighted by Lloyd-Sherlock (2006). The author attempted a static application of old-age vulnerability using Moser's (1998) vulnerability frameworks to identify economic vulnerability amongst Thai elderly and found the data requirements to be problematic.

While some governments, including Nigeria, are beginning to collect multi-year data in SSA, as part of the GHPS (General Household Panel Survey) data initiative, it would still take a few years for a complete longitudinal set to be developed (Chapter 4). Until then, a dynamic analysis of economic vulnerability among individuals and households is likely to be limited. Given this methodological consideration, this thesis defines economic vulnerability from a static perspective. It modestly attempts to contribute a Nigerian perspective to the vulnerability literature in line with available household income data. Economic vulnerability in this sense can be characterised by a welfare allocation measure, ignoring economic shocks and risks. A justification for the study's choice of this approach is guided by the literature discussed in Chapter 2, and in the Methods (Chapter 4).

Data difficulties aside, economic vulnerability in old age can threaten wellbeing of older people. In contexts of poverty, vulnerability is particularly disastrous (Barrientos et al., 2003; Grundy 2006; Barrientos 2007; Lloyd-Sherlock, 2006; Gould and Cooper, 2013; UN, 2014). I earlier noted that this study assumes that not all elderly are vulnerable because older Nigerians

are a diverse group. Based on this position, the economic situation of the urban elderly is assumed to differ from that of the rural elderly in Nigeria. The study's urban focus is motivated by the unique characteristics of an urban environment. I discuss these characteristics highlighted in the literature in the following paragraphs.

In recent years, studies have increasingly highlighted the inequalities in urban SSA settings. These studies challenge the myth that urban residents have more secure livelihoods than their rural counterparts. For example, Potts (2013) posits that the insecurity of urban livelihoods in SSA has led to many households turning to urban agriculture to survive and earn a tiny income. In Nigeria, urban poverty was 3% in the early 1980s (Fourchard, 2005, citing FOS 1999), while in 2009, it was about 62% (Anyanwu, 2014). Despite the economic growth in rapidly urbanising SSA states, Potts (2013, p.171-172) posits that urban poverty is increasing because economic growth is not creating new jobs in the formal economy.

The rural-urban drift of unskilled workers has put significant pressures on the formal economy in urbanising developing countries; and it is estimated that one billion new jobs will be needed by 2025 to sustain the population growth in urban areas of the developing world (Giddens, 2009, citing OECD 1999). Potts (2013) juxtaposes this phenomenon with that of Asia, where a large scale creation of urban-based jobs has led to a decrease in poverty. The author criticises the vision of SSA governments to tackle poverty without a consideration of the effects of rapid urbanisation. Rapid urbanisation can have welfare-reducing consequences on economically vulnerable individuals in urban Nigeria. It can lead to a strain on urban development, which leads to higher levels of poverty (Ogun, 2010). As the literature testifies, Nigeria is undergoing rapid urbanisation (Agunwamba et al., 2009;Satterthwaite, 2014)[12].

In addition, other strong arguments put forward by urban sociologists further compel this study's urban consideration. These researchers argue that the unique characteristics of city living make urban residents in developing countries particularly disadvantaged. City living can be vulnerability-inducing because it demands more financial resources to survive; income generating opportunities are also very competitive (Hardoy et al., 2013;Hardoy and Satterthwaite, 2014;Devas, 2014;Montgomery and Hewett, 2005;Akpan and Ekpenyong, 2013).

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[12] While there is a consensus that Nigeria is rapidly urbanising, there are ongoing controversies regarding the country's urbanisation rates. Potts, D. 2012. Challenging the myths of urban dynamics in sub-Saharan Africa: The evidence from Nigeria. *World Development,* 40**,** 1382-1393. argues that based on the Africapolis estimate, urbanisation in Nigeria is actually 30%, compared to the 49% asserted by the UN. Bocquier and Mukandila (2013) analyse the UN's World Urbanisation Prospects 2007 Revision data using a third-order polynomial model of the urban-rural growth difference from 1950 to 2005 in African countries. The authors find that the urban population projection stagnates at around 40%, compared to the UN's prediction of 62%. On the other hand, using urbanisation trends from 1985 to 2004, 49% of the population resides in urban areas— see Ogun, T. Infrastructure and poverty reduction: implications for urban development in Nigeria. Urban Forum, 2010. Springer, 249-266.

Other distinctive problems of urban life in Nigeria include the following: housing affordability problems (Ndubueze, 2009;Brueckner and Lall, 2015); urban crime (Fourchard, 2005); commoditisation, social fragmentation, and environmental hazards (Moser, 1998;Beall and Kanji, 1999;Agunwamba et al., 2009). These urban context issues provide a strong impetus to study economic vulnerability and its consequences among urban elderly Nigerians.

1.2   The Consequences of Economic Vulnerability: Health Dimensions

Economic vulnerability can have various devastating consequences on economically disadvantaged individuals. This is a view that has been forcefully expressed by Gesthuizen and Scheepers (2010) in their study of economic vulnerability among low-educated individuals in twenty-two European countries. The authors attest that economic vulnerability can lead to higher crime rates and lower health status. Given the micro-level nature and context of my study, the investigation is concerned with the latter issue. In the next few paragraphs, I discuss the contextual background which ascribes health as an important aspect for elderly Nigerians, and which motivates this thesis.

Earlier, I highlighted the tendency for dominant international institutions to view older persons in the South as a homogenous vulnerable group (UNDP, 2009;UN, 2014). One area in which they may have correct assumptions is the area of health. Men and women, regardless of their backgrounds, experience physical and mental decline in old age (Johnson et al., 2005a;Prince et al., 2015). For example, in the European literature, Grundy (2006) argues that mortality risk increases with age, and that the risk of developing old-age diseases such as dementia increases with age. Ferrucci et al. (2005) testify that elderly people are more likely to develop diseases with age. Globally, multimorbidity[13] also increases with age (Afshar et al., 2015). In Sub-Saharan Africa, there is a high prevalence of multimorbidity and disability amongst older Africans and significantly lower levels of health care utilisation in comparison to younger groups (Aboderin and Beard, 2015;Maharaj, 2012).

In India, Alam (2006, p.79-82) reported a similar health status for both urban and rural elderly but the main common ailments of elderly Indians were poor functioning and sensory impairment. In Nigeria, older people are prone to serious physical functioning problems and old-age diseases such as musculoskeletal disorders and dementia, which can place a greater demand on household resources (Gureje et al., 2006;Abdulraheem, 2007;Abdulraheem and

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[13] According to Afshar et al (2015), multimorbidity is a recent global phenomenon that refers to when an individual has two or more chronic diseases. Using chronic disease data from WHO Surveys (2003) in 27 LMICs and 1 HIC countries, the authors find that age increases with multimorbidity.

Abdulrahman, 2009;Olaniyan et al., 2011;Aboderin and Beard, 2015;Iloh et al., 2013;Hendrie et al., 2001;Albanese et al., 2011). Among urban elderly Nigerians, Gureje et al. (2006) found a higher prevalence of functional disabilities among the urban elderly compared to those residing in rural areas.

Of course, the rate at which physical functioning decline occurs may differ for various reasons that may be unobservable. Nevertheless, declining health status old-age can also be linked to a demand for economic resources. Theoretically and empirically, the relationship between economic resources and health status has been well-documented (Alam, 2006;Deaton, 2007;Case and Deaton, 2005a;Maharaj, 2012;Grossman, 2000;Van Eeuwijk, 2006;Lawson, 2004). Among other socio-economic factors, most of these studies contend that differences in income can explain health disparities; if people are economically constrained, they are less likely to have enough resources to spend on health or utilise health care services when they are ill leading to poorer health status. In other words, wealthier older individuals are more likely to invest in health (Grossman, 1972, 2000). A poor health status may also constrain income, which could lead to high health payments that are welfare-reducing (Xu et al., 2003b;Wouterse and Tankari, 2015;Brinda et al., 2015). The goal of this thesis is to identify the indirect impact of economic vulnerability on health status and health spending.

Understanding these relationships are important for two reasons: Nigeria's health system is regressive in nature, which means that both rich and poor people pay the same health care fees (PMNCH, n.d) and high health care costs can be quite punishing on constrained budgets and for households with elderly people in ill-health (Arin and Hongoro, 2013). Using the medical admission records of elderly Nigerians at a teaching hospital, Sanya et al. (2008) found that some elderly Nigerians prematurely self-discharge themselves from the hospital due to poverty. Conversely, if one is rich, one can probably afford better quality health care compared to the poor. However, significantly high expenditures on health can also have detrimental effects on economic welfare in developing countries (Arin and Hongoro, 2013). Studies in Asia suggest that chronic diseases amongst elderly people can lead to catastrophically high health expenditures due the high out-of-pocket health payments (Somkotra and Lagrada, 2009;Wang et al., 2015). Both studies have found that having at least one elderly person within the household can create a significant economic burden for poorer households. Therefore, ascribing a link between health status, health spending, and economic vulnerability in this way is one novelty of the research. I attempt to control for gender and other socio-economic factors in the empirical models (Chapter 8). In this way, the likely consequences of economic vulnerability may be inferred based on the strength of the relationship between health status and economic vulnerability; and health spending and economic vulnerability.

A quantitative analysis of the health-related consequences of economic vulnerability would contribute greatly to the equity of health literature. Considering that, Nigeria's current national health insurance coverage is less than 3%; most health care costs are financed primarily out-of-pocket—over 70% of private health spending is private, and 96% of this expenditure is made up of out-of-pocket payments (WHO, 2010;Joint Learning Network, n.d;Arin and Hongoro, 2013). Out-of-pocket health payments (OOP) and household health expenditures amongst urban elderly households in developing countries offer a unique opportunity to examine the health-related consequences of economic vulnerability (EV) to prompt policy action to meet the government's objective of ensuring health equity for all Nigerians (FMOH, 2006).

It is against this background that the study was conceived. In the next section, I present the rationale and significance of the research.

1.3   Rationale and Significance of the Research

Valuable insights on economic vulnerability are required to illuminate the inequalities in old age in urban Nigeria. This thesis has observed that welfare concerns of older people in much of SSA have primarily been devoid of economic content in the African gerontological literature. This lack of economic perspectives has also been observed in the wider social gerontological literature by Vern Bengston and his colleagues (see Johnson et al., 2005a, p.3-20 for a discussion). Out of its 50 chapters, a recent handbook on social gerontology by Phillipson and Dannefer (2010), published by SAGE, attempts to incorporate two chapters with quantitative illustrations: the 'Economics of Ageing' by James Schulz and 'Age and Inequality in a Global Context' by Rand et al. Even then, it struggles with presenting comparable evidence on developing countries. In one of the published articles, Schulz (2010, p.37) notes that there is a widening gap in knowledge on the poverty and economic vulnerability of older people in developing countries, which needs to be resolved.

Two prominent African gerontologists, Isabella Aboderin and Monica Ferreira have revealed that there is an important information gap in the scope and patterns of inequalities within older populations in Sub-Saharan Africa (Aboderin and Ferreira, 2008). Aboderin (2010) views the use of well-grounded theoretical ideas as the solution to filling the gaps in the African gerontological literature, but the author fails to address a key challenge being expressed in the wider social gerontological literature. It is thought that gerontology as a whole lacks cross-disciplinary explanations, which restricts its overall theoretical growth and development (Johnson et al., 2005a;Victor, 2013).

Tracing the development of African gerontology over the years, Aboderin (2010) criticises the dominant application of the modernisation thesis in the early African literature. The author blames the early UN-led, advocacy-oriented literature for pushing forward the modernisation and ageing theories in the 1980s to the late 1990s in SSA and the subsequent uncritical adoption of the modernisation theory by researchers in SSA.

Within this theoretical application, an older person's vulnerability is often determined by an erosion of traditional family support systems (Apt, 2002;Oppong, 2006;Unanka, 2002;Okumagba, 2011;Zimmer and Dayton, 2005;NPC, 2003;Baiyewu et al., 1997). These studies maintain that the changing family structures have been brought on by countervailing forces of urbanisation, modernisation, and HIV/AIDS, which have undermined the primary institution of care for elderly people. It can be further argued that these studies have been

moderately successful in challenging the persisting belief held by policymakers in parts of Sub-Saharan Africa that old-age familial support is sufficient and, therefore, social welfare policies for older people are unnecessary. However, they have been weak in providing evidence on the economic welfare of elderly people, based on such familial arrangements or exchanges. This is an issue that has been noted by the eminent sociologist, Albert Hermalin, regarding the Asian elderly in his important book, *The Wellbeing of the Elderly in Asia*. For the author, understanding the economic wellbeing of elderly in developing countries requires 'more objective measures of income…'(Hermalin, 2010, p.296).

In the African gerontology literature, the modernisation theory has often been invoked historically to understand the position and status of older people in society, although this practice in contemporary developing country contexts has been critically and empirically challenged by Aboderin (2006). The author argues that the dominant application of the modernisation theory in the literature was driven by developments in Western concerns in the early twentieth century, which saw many elderly people in urban areas of the United Kingdom and United States in a state of poverty and economic deprivation (p.29). These developments sparked the creation of state pensions (also see Victor (2013) and Phillipson and Dannefer (2010). Aboderin's argument is based on the premise that these structural changes have not been experienced in the same way in many Sub-Saharan African countries.

The Modernisation Theory: A Brief Overview

The study by Cowgill and Holmes (1972) is generally credited with pioneering the modernisation theory in social gerontology[14]. In 1974, Cowgill improved on the theoretical application by extending the modernisation theory to highlight four areas of modernisation which affect elderly people—health technology, economic technology, urbanisation, and education (Cowgill, 1974). Health technology works by improving life expectancies and increasing the number of older people. Its implications are based on its welfare-reducing effects on the work statuses of elderly people. The rise in the number of older people would lead to older people being induced to early retirements due to increasing competition; economic technology refers to the creation of new jobs which demand a new set of skills, making traditional skills obsolete. One example is the introduction of computer processes in the work domain, making jobs done by older people obsolete. Urbanisation is examined based on rural-urban drift, which creates a situation where elderly people are left behind in rural areas. This creates a wealth gap, where younger people in cities are richer and have more prestige;

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[14] In sociology, modernisation theory is thought to have originated from the early work of Emile Durkheim (1951) and Max Weber (1968). Both scholars contrasted the status of elderly people in traditional societies compared to their loss of power in modern society (Harris, 2007, citing Durkheim 1951; Weber, 1968).

education based on the modernisation theory creates a status disparity between young and old, where the young are viewed as more educated due to their capacity to learn new skills more quickly than older people. Younger people also do not need to unlearn gained skills which may not be relevant in a modernised world. This is linked to the economic technology effects. These ideas have influenced the gerontological literature both in developed and developing countries (Hooyman and Kiyak, 2013). But following on from her critique of the modernisation theory which I discussed earlier in this Section, Aboderin (2006) offers an alternative method of studying inequalities among the elderly in developing countries, using a material constraints perspective.

The Material Constraints Argument: Challenges and Contradictions

Aboderin's material constraints perspective maintains that families may wish to take care of their older kin, but the families are unable to do so primarily because they are simply too poor to do so (Aboderin, 2004, 2006). Following Aboderin's material constraints argument, the dominant modernisation theory narrative may have shifted to a material constraints explanation. However, given the lack of studies in the African literature, it is not clear whether the material constraints argument has created a paradigm shift. But, the material constraints argument is a more fitting context of poverty in, for example, Nigeria, where poverty is endemic (Appleton et al., 2008;Anyanwu, 2014). On a macroeconomic scale, the political economy of ageing perspective tends to incorporate material constraints in highlighting the tensions in resource allocation at the macro-level (Barrientos, 2009;Niño-Zarazúa et al., 2012).

Yet, Aboderin (2006) is dissatisfied with the parallel application of modernisation theory and political economy ideas in the African literature. The author rightly acknowledges that the use of other theories in the literature suggests a greater understanding of the deficiencies of the modernisation model to account for the observed welfare inadequacies of older people in the developing world (p.30). But Aboderin (2006, citing Aboderin 2004, p.41) strongly argues for an interpretive approach, which takes its starting point from a motivational basis of familial support in old age. Unfortunately, Aboderin's arguments have been largely ignored in the African gerontological literature. One reason might be that the approach she advocates is epistemologically different from that of other researchers. As Aboderin herself notes, the main criticism of an interpretive approach is that it focuses on gathering evidence of individual perspectives, meanings, and actions which are subjective in nature. The strength of interpretive approaches is that they provide a 'nuance and texture' which positivist approaches do not provide. The subjectivity and non-representativeness of interpretive approaches may explain the predominance of positivist approaches (Kanbur, 2003).

Studies that examine the material constraints of elderly people in SSA are primarily positivist in their theoretical orientation and have been more useful to policy makers (Barrientos et al., 2003;Lloyd-Sherlock, 2000;Unanka, 2002;Deaton and Paxson, 1995;Case and Deaton, 1996;Niño-Zarazúa et al., 2012;Devereux and White, 2010;Kakwani and Subbarao, 2005b). Policymakers in African settings tend to draw on quantitative evidence in resource-scarce contexts, perhaps because it is more efficient to aggregate data and is more representative of African nations (Kanbur, 2003;Hulme and Toye, 2006).

This is not to say that it is not possible to incorporate interpretive approaches powerfully, as evidenced by the three-part research study, *'Voices of the Poor',* led by Narayan and her colleagues at the World Bank (Narayan et al., 2000;Narayan-Parker and Petesch, 2002;Narayan-Parker and Patel, 2000). The study pioneered the use of participatory and interpretive methods to understand the human experiences of poverty in twenty-three countries, including Nigeria. The *'Voices of the Poor' project* has been influential in prompting policy actions and debates in many countries since its publication. The strengths of the findings in this work are thought to have influenced the fragile consensus about the complementarities of qualitative and quantitative methods (Kanbur, 2003;Hulme and Toye, 2006, 2013). Another case in point is the 'What Works for the Poorest' project led by Lawson et al. (2010) including Hulme, which advocates for a similar multidisciplinary approach. The majority of these developments have taken place in development studies rather than gerontology. The wide-reaching implications from these projects in understanding and tackling vulnerability in developing country contexts underscore the usefulness of cross-disciplinary approaches.

In my view, the reluctance of researchers to incorporate relevant economic theories and quantitative methodologies minimises the contribution of African gerontology to the emerging debates on addressing economic vulnerability in old age. For example, Aboderin's failure to incorporate cross-disciplinary explanations may have weakened the author's assertions about the need to incorporate other perspectives in understanding the decline of material support. She rightly proffers a material constraints argument but solely from an interpretive approach. In many poor contexts, it may be more important for policy designers to understand whether material support for the elderly declines because of certain socio-economic characteristics rather than individual motivations—a major concern in the economics or development studies literature. This is often an approach that can easily be applied to other similar contexts.

By drawing on economic vulnerability perspectives in development studies, Aboderin (2004) could have widened the scope of examining material constraints within a vulnerability framework by foraying into development studies. The author states that she draws from development studies (Aboderin, 2004), but it is unclear which concepts of development studies

are being drawn upon in her empirical study. My study takes the position that there is a scope for African gerontology to incorporate quantitative approaches in understanding the economic inequalities in old age. This lack of quantitative evidence on older Africans may explain the low policy impact of studies in African gerontology compared to its Western counterparts in the wider social gerontological literature. Aboderin (2010) asserts that, this lack of impact in policy is partly due to the dated small-scale studies and the minimal use of secondary data. While Monica Ferreira posits that the scant literature on the well-being of older populations in Sub-Saharan Africa, may be as a result of there being only a few African gerontological researchers successfully publishing in Western-based reputable journals (Ferreira, 2005).

In Nigeria, it cannot be disputed that empirical evidence on the economic vulnerability of older people in Urban Nigeria is greatly needed. The most comprehensive descriptive study of older Nigerians on a national scale was published in 2013 (see NPC, 2003). More importantly, it is not clear how the demographic and socio-economic factors identified in the NPC report, influence economic vulnerability in old age. Cohen and Menken (2006) argue that the sparse research on the elderly has inhibited the mainstreaming of elderly people in development policies in SSA. This study modestly attempts to generate some empirical evidence on urban elderly Nigerians and the influencing factors of economic vulnerability in old age as well as its health related consequences.

This study of economic vulnerability carries an academic value by strengthening the knowledge base on older people in urban SSA contexts, in particular urban elderly Nigerians. It facilitates an understanding of the economic inequalities among urban elderly Nigerians—a knowledge gap that needs to be urgently resolved to re-invigorate the African literature. More importantly, this thesis takes the position that the gaps in the African gerontology literature can be addressed by strengthening its quantitative empirical base.

Thankfully, a paradigm shift may be occurring in the African gerontological literature, although it is unclear whether the change in thinking is only on the part of Isabella Aboderin herself, due to the low rates of research publications in the African literature. Recent studies by the author suggest a greater recognition that securing the material welfare of older people goes beyond intergenerational ties (Aboderin, 2012b). The author uses robust statistical data in one recent work on the health of older people in SSA (Aboderin and Beard, 2015). Strangely, while Aboderin (2010) makes a solid case for well-grounded empirical work and criticises descriptive-oriented quantitative studies, the empirical assertions on labour force participation and health amongst older people in her recent work are also based on simple data summaries (see Aboderin (2012b) and Aboderin and Beard (2015) respectively).

Nevertheless, if this paradigm shift is much more wide-spread than is obvious, then this study constitutes a timely addition to the African gerontological field. Gerontology is in itself cross-disciplinary, as it incorporates disciplines like sociology, psychology, economics, and politics (Victor, 2013;Johnson et al., 2005b;Phillipson and Dannefer, 2010). Yet, cross-disciplinary studies on older people in developing countries tend to be in development studies (Moser, 1998;Lloyd-Sherlock, 2006;Barrientos, 2007a). The main contribution of this thesis applies basic econometric models in examining economic vulnerability and draws on economic, gerontological, and sociological perspectives to examine the possible determinants and consequences of economic vulnerability among urban elderly Nigerians.

Obviously, this line of enquiry demands a greater use of statistical data and economic explanations. But economic theories present an advantage in examining the conditions of elderly people as economically productive individuals, which can then be formally tested using econometric models. The application of economic theories in empirical work on elderly Sub-Saharan Africans is not new. The issue is that most of these studies are in South Africa (Case and Deaton, 2005a;Lam et al., 2006;Case and Deaton, 1996). Additionally, sociological and gerontological perspectives offer a nuanced understanding of the differentials in income inequalities in old age (Narayan-Parker and Patel, 2000;Hulme and Toye, 2013).

The recent development efforts in Nigeria to address rising income inequality and vulnerability through the implementation of the government's 'Inclusive Growth Agenda' highlights the lack of priority accorded to old-age issues (Chapter 3). Through this agenda, the government aims to address social protection issues in three ways: maternal and child health; conditional cash transfer programmes; and community-driven development programmes (African Development Bank, 2015). Older people are relegated to the background in the agenda; a stance that is reminiscent of Nigeria's long-standing attention to productivity and growth, which prioritises younger populations and ignores the elderly (Togonu-Bickersteth and Akinyemi, 2014;Collier et al., 2008;Adésínà, 2009).

This neo-liberal and pro-market regime stance needs to be challenged. But in the first instance, a worthy challenge to include older people in development programmes requires compelling evidence on the determinants and consequences of economic vulnerability in old-age. This thesis on urban elderly Nigerians would be particularly useful in building a knowledge base on the economic inequalities among older Nigerians, which may then be tackled by social welfare policies.

1.3.1 A Cross-disciplinary Study on Older Africans: The Missing Dimension

I have touched on the predominance of the modernisation theory as the main theoretical explanation for the changes observed in traditional families in urban West African contexts. Additionally, the deficiencies in the modernisation model have been well-documented in the social gerontological literature (Victor, 2013;Johnson et al., 2005b;Aboderin, 2011;Harris, 2007).

Bai (2011) reviewed 118 modernisation and ageing studies from 1980 onwards in the social gerontology field and found that 72 of these studies reported impacts of modernisation on older people — 32 of the studies reported a negative impact, four reported a positive impact, and 18 reported a mixed impact. Seven of the studies reviewed by the author found that the shape between modernisation and ageing was not linear (p.16). The author notes that studies on modernisation peaked in 2009 in particular and then began to drop from 2010. This change in the literature could be attributed to the low explanatory power of the modernisation theory over the years. For example, early critics of the modernisation theory have argued that the theory assumes a linear relationship between modernisation and the status of elderly people, which is often not the case. Also, modernisation in its advanced stages improves the overall status of elderly people (Harris, 2007, citing Palmore and Manton, 1974).

In contexts of poverty, it is indeed myopic to heavily ascribe modernisation as a one-size fits all theory in understanding the wellbeing of the elderly in urban African contexts. In this regard, the material constraints argument has a more fitting contextual application. I noted earlier the limitations of the material constraints arguments put forward by (Aboderin, 2004, 2006). Additionally, there is a lack of cross-disciplinary interpretations in the African literature, which has been noted in the wider social gerontology literature (Johnson et al., 2005b;Phillipson and Dannefer, 2010).

Taking a scoping review of the wider international gerontology and sociology of ageing literature[15], one can easily observe a Western bias in the wider social gerontological field. African gerontology is conspicuously missing in the literature, which is remarkable. For example, the reference guide by Johnson et al. (2005) entitled 'The Cambridge Handbook of Age and Ageing' is one of the most cited resources by researchers in the field of ageing, and it is described as 'state-of-the-art' by its publishers. It is a broad collection of studies, written by leading gerontologists in sixteen countries. The handbook contains sixty-seven papers and only

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[15] Scoping reviews are by no means an exhaustive review of the sociological and gerontological literature.

two of the papers focus on a developing country context: the papers by Isabella Aboderin, 'Changing Family Structures in Developing Nations' and Lia Susana Daichmann, 'Elder Abuse in Developing Nations', are the only two papers that discuss the African elderly. A subsequent handbook on social gerontology by Phillipson and Dannefer (2010), published by SAGE, attempts to provide a balanced view by incorporating more developing country contexts of ageing by including Asian, Latin American, and Sub-Saharan African perspectives alongside Western examples of ageing issues. In relation to the economic aspects of ageing, it struggles with presenting cross-cultural evidence (Schulz, 2010).

In the sociology of ageing literature, this lack of evidence on SSA is also evident. Diana Harris's book, Sociology of Aging (Harris, 2007), first published in the early 1980s, is perhaps one of sociology's most successful books on the sociological aspects of ageing. Now in its third edition, the author attempts to include cross-cultural perspectives by incorporating non-Western age norms. For example, it includes examples of cultural norms in traditional China (p.59-60), Southern India and New Guinea (p.41), and Uganda (p. 71). Besides these noted examples, it majorly focuses on the United States and the United Kingdom. Although social gerontology in Western countries has been around for much longer (Victor, 2013:26), the African gerontological literature is relatively new and has much to contribute to the social gerontological literature.

The African gerontological literature can help narrow the gap in the literature on older people in SSA countries. Academic studies on elderly Africans have been influential in the identifying elderly people as a vulnerable group within the socio-gerontological literature. By incorporating cross-disciplinary approaches, the African literature can increase its influence in the wider social gerontological field and in the policy sphere in Africa. For instance, by incorporating political economy of ageing approaches, the elderly can be viewed as productive individuals rather than a homogenous group that depends solely on family support (Chapter 3). To my knowledge, this study is the first that attempts to address this gap by adopting a cross-disciplinary approach to provide useful explanations of its quantitative findings on urban older people in Nigeria.

1.3.2   Secondary Data and Analytical Techniques

This study uses data from Wave 1 of the Nigerian General Household Panel Survey (N-GHPS or NGHPS), collected by the National Bureau of Statistics (NBS) in 2010, and published in March 2012—with technical support from the World Bank. This study makes a contribution to examine the determinants and consequences of economic vulnerability amongst elderly people in urban Nigeria using individual and household level data. I follow convention in household

welfare analysis by ascribing the key drivers of economic vulnerability as the main determinants, represented by certain socio-economic factors that pre-dispose elderly people to economic vulnerability. The consequences of economic vulnerability relates to the impact of economic vulnerability on the health of elderly people. In the main empirical chapters, economic vulnerability is represented by a consumption allocation welfare measure (household consumption expenditure per capita).

This study's main secondary data source is the NGHPS dataset. As the survey is not an ageing survey, I encountered some interesting methodological questions through using the NGHPS that would be useful to other applied researchers that are interested in studying other economically vulnerable groups by using a cross-sectional research design. As the study is focused on a micro-level analysis, the NGHPS data is suitable for a cross-sectional research design. The use of household surveys to undertake a static analysis of old-age poverty is relatively common in developing countries. But the application of a cross-sectional research design to study economic vulnerability amongst older people is similar to previous studies of older people in the United States (Butrica et al., 2005;Abdel Ghany and Sharpe, 1997;Rubin, 1997). This study is novel in the sense that it uses a new dataset on individuals and households in Nigeria. Indeed, the NGHPS is a rich source of information on households, which is sufficient to study economic vulnerability among the urban elderly. I go on to discuss the suitability of the NGHPS in detail, in Chapter 4.

Although, the short-term nature of the data limits the inferences to correlational associations, this study is the first empirical examination of economic vulnerability and its consequences among elderly households in Nigeria, and the findings are important for policy. At the time of writing this thesis, Wave 2 of the NGHPS was recently published. In the next few years, for researchers interested in understanding the dynamics of economic vulnerability amongst elderly people in Nigeria, this study will be a useful reference point for empirical comparisons. While the study is unique to the urban Nigerian context, the findings may be relevant in other urban African contexts. To retain its relevance to all three related disciplines, this study refrains from the overuse of complex econometric terminologies and uses mainly multivariate regressions in all the empirical analysis.

This economic vulnerability study assumes two key elements: (1) economic vulnerability can be characterised by a welfare allocation measure, and (2) there exists a unique set of socio-economic and demographic factors which pre-dispose the elderly to economic vulnerability that can be identified across three disciplines — social gerontology, sociology, and economics. Items (1) and (2) can be viewed as dependent and independent variables respectively. The approach of using consumption allocation to examine household welfare is related to the

household welfare literature in applied economics. This body of literature emerged from the World Bank's Living Standards Measurement Study in the 1980s to the late 1990s (Deaton, 1997;Grootaert, 1983;Blundell et al., 1994). These studies apply economic theory to empirical methods, using welfare allocation measures such as expenditure data to measure household welfare, from aggregate data sources (Blundell et al., 1994). I discuss the limitations and strengths of this approach in Chapter 2.

While consumption levels can be used to assess poverty in the household welfare literature (Chapter 5), In Chapter 4, I also consider alternative welfare measures that were rejected in this study. This thesis also accepts the view that poverty and vulnerability are related but are not identical (Calvo and Dercon, 2005;Chambers, 2006). These distinctions are discussed in Chapter 2, and elaborated upon with a simple test in Chapter 5. As I draw greatly from the NGHPS, I devote a chapter on examining the strengths and weaknesses of the NGHPS and summarise the main methods and procedures of the study (Chapter 4).

In interpreting the research findings, I draw on concepts in economics, gerontology, and sociology. This study is on urban elderly Nigerians and their households, and it represents a unique contribution to the African gerontological literature. I earlier mentioned some of the identified challenges facing social gerontology. Thus, this study has been designed sympathetically in line with the identified challenges inhibiting the growth of contemporary gerontology (Chapter 3). Johnson et al. (2005) argue there must be a willingness to transcend disciplinary boundaries in social gerontology. This study aspires to this ideal. Where relevant, it has incorporated theoretical insights from social gerontology and development studies discussed in the early chapters of the thesis. The study has also drawn on relevant theories in economics in its main empirical analysis in Chapters 6 and 7. More importantly, this study is proof that a cross-disciplinary approach can be incorporated within African gerontology.

This study also takes a more contextual approach in defining old age in urban Nigeria. The majority of studies in the African literature discussed above utilise westernised notions of old age, including the studies by the critics of dominant international institutions, that is, Aboderin and Ferreira (2008);(Aboderin, 2010). This study contributes a context-specific analysis in understanding the correlations of economic vulnerability among elderly Nigerians. It lends its voice to the ongoing debates on the need for a context-specific old-age definition in the literature (Chapter 4). The factual overview in this study provides a more recent urban Nigerian perspective to the literature on the later-life stage. It is a good starting point to investigating why some older people in urban settings of Sub-Saharan Africa are likely to be more economically vulnerable than others.

1.4 Research Questions

To achieve the goals in this study, two main research questions are addressed:

i. To investigate the determinants of economic vulnerability, the first research question is: Do demographic and socio-economic factors influence economic vulnerability through consumption allocation?

ii. To identify the health-related consequences of EV, this thesis examines the second research question: Does economic vulnerability (through consumption allocation) directly influence health status and health spending? The NGHPS contains information on household health expenditure aggregated over twelve months. Self-reported health status data is also provided, enabling me to address these questions adequately.

1.5 Structure of the Thesis

The rest of the thesis is organised as follows: Chapter 2 presents the scoping review of the related vulnerability and health literature. Chapter 3 discusses the social and economic policy context in Nigeria, from a political economy of ageing perspective. Chapter 4 presents the study's methods and main secondary data source, including the relevant components of the NGHPS, and its strengths and weaknesses. Chapter 5 investigates the underlying determinants of economic vulnerability as a precursor to the main empirical chapters. Chapter 6 presents the consumption allocation model to examine the determinants of economic vulnerability as well as the estimation strategy and results. Chapter 7 examines the health-related consequences of economic vulnerability empirically, through the use of the study's consumption allocation welfare measure, and three health dimensions. Chapter 8 concludes and offers some policy recommendations.

2. Literature Review

Economic vulnerability as a concept refers to a condition affecting countries, individuals, and households. At a macro-economic level, it generally refers to the economic welfare of countries or regions (Phillips et al., 2010;Oshewolo, 2010;Guillaumont, 2011;Cariolle, 2011). A review of the macroeconomic level vulnerability literature can be found in Cariolle (2011). The author finds a consensus in the definition of economic vulnerability at an aggregate level, similar to the World Bank's 2000/2001 definition, which I highlighted in Chapter 1 (World Bank, 2001): 'economic vulnerability is the likelihood that a country's economic development process is hindered by the occurrence of exogenous unforeseen events, often called external shocks' (Cariolle, 2011, citing Guillaumont 2008, 2009). Whereas, in micro-level studies, economic vulnerability is a more controversial term (Gould and Cooper, 2013;Gesthuizen and Scheepers, 2010;Chambers, 2006;Calvo and Dercon, 2005;Moser, 1998). As this study is focused on the elderly and their households, I restrict the review to studies that focus on individuals and households using a scoping literature review method.

Scoping literature reviews are an efficient way of identifying similar themes and patterns in high-volume research areas (Arksey and O'Malley, 2005;Rumrill et al., 2009). However, a scoping literature review on economic vulnerability is by no means an exhaustive discussion of its application in all disciplines.[16] The aim of this review is also to explore the following questions: **One, how can economic vulnerability be defined and measured? ; Two, Why are some older people economically vulnerable than others? Three, how is health linked to economic vulnerability, and how might this link be examined?**

Additionally, this chapter is concerned with vulnerability studies in the social sciences. It briefly reviews the micro-level literature on economic vulnerability primarily in development studies and sociology. It presents the various definitions based on these disciplines and discusses the relevant literature on old-age vulnerability in the gerontological literature, in light of its strengths and weaknesses as well as to position the study within the existing cross-disciplinary literature that specifically examines economic vulnerability among individuals and households.

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[16] For a more exhaustive account of vulnerability studies, see Alwang, J., Siegel, P. B. & Jorgensen, S. L. 2001. Vulnerability: a view from different disciplines. Social protection discussion paper series.

2.1 Defining and Measuring Economic Vulnerability

This section reviews studies that have to some degree conceptualised, a working definition or measure of economic vulnerability in the related literature.

2.1.1 Conceptualising Economic Vulnerability in the Related Literature

Vulnerability, as a concept, is broad and complex. It is thought to have emerged from the natural disaster literature that often drew on sociological concepts such as class, gender and ethnicity. These studies can be traced to studies in the early 1990s. According to Varley (1994, p.19), 'vulnerability is a complex characteristic produced by a combination of factors derived especially (but not entirely) from class, gender, and ethnicity'. Bolin and Stanford (1998, p.9-10) share a similar view. The authors state that 'vulnerability concerns the complex social, economic, and political considerations in which peoples' everyday lives are embedded […]'. They note that choices and constraints are determinants of vulnerability—some of these constraints include disability, education, and employment.

In the social sciences, vulnerability can be conceptualised using objective and subjective measures. The term 'vulnerability' is a term typically used in the development studies literature, describes people without adequate safe-guards and who are at risk. This notion of vulnerability in the existing literature can be traced to Robert Chambers' study of the rural poor in developing countries in 1983. According to Chambers (1983:110), 'a household is vulnerable if it has a few buffers against contingencies.' In 1989, the author went on to define vulnerability as a combination of risks, shocks, and insecurities (Chambers, 1989, 2006). In the 1990s to the early 2000s, the notion of risk continued to play an important role in the definitions of vulnerability in the economics literature. These studies asserted that exposure to an economic shock causes people to be at risk of vulnerability, subject to their levels of coping mechanisms (Moser, 1998;Chambers, 2006;Calvo and Dercon, 2005). Dercon (2001) ascribed vulnerability to those that are vulnerable before economic shock occurs (*ex-ante*). Glewwe and Hall (1995, 1998) ascribe vulnerability to groups after the economic shock has occurred *(ex-post)*. Coudouel et al. (2002, p.34) take an even more complex view, that 'vulnerability is a broad concept, encompassing not only income vulnerability but also such risks as those related to health, those resulting from violence, and those resulting from social exclusion – all of which can have dramatic effects on households'. Calvo and Dercon (2005: 2) define vulnerability as a 'measure of the magnitude of threat of poverty' in the face of uncertainty'. Barrientos (2007) stated that 'vulnerability is defined as the likelihood of being poor in the future'. For Bloom et

al. (2011, p.1), vulnerabilities of older people are based on three aspects: 'lack of income, health insecurity, and the need for physical care'.

In the sociological and gerontological literature, vulnerability studies which use the concept of vulnerability are rather uncommon. When it is applied as a concept, vulnerability features more prominently as a more complex and subjective concept. This narrow literature on vulnerability in these two disciplines tend to build on social constructionist views, with their main concerns embedded in notions of individual agency and ageing processes within social structures (Giddens, 2009;Johnson et al., 2005a). Schröder-Butterfill and Marianti (2006) review the notion of vulnerability in the British and Asian gerontological literature and develop a framework for examining vulnerability. The author notes the diversity in terminology of vulnerability in the gerontological literature. Vulnerability studies in social gerontological studies are based on qualitative measures (Schröder-Butterfill, 2006;Van Eeuwijk, 2006).

Qualitative studies in developing countries on old-age vulnerability also tend to be heavily contextual. One good example is Schroder-Butterfill's (2006) study of vulnerability amongst elderly people in Indonesia. Kinship relations in Indonesia, with its emphasis on close communal ties, are likely to be different from an urban context in Nigeria as household structures are becoming less traditional in orientation (Okumagba, 2011;Mberu, 2007). Unanka's (2002) study of elderly Nigerians in Imo State found emerging asymmetrical household structures which do not have the same reciprocal element as seen in more traditional family structures. It is a finding that is supported by quantitative evidence in other studies. One study on household size and composition in developing countries, including Nigeria, found increasing nucleation of family structures in urban areas (Bongaarts, 2001).

Overall, vulnerability theorising in empirical vulnerability studies have evolved in recent years, from a focus on defining vulnerability and economic vulnerability to a greater emphasis on empirical applications using econometric models or conceptual frameworks. According to Schröder-Butterfill and Marianti (2006), vulnerability can be sub-divided into four themes: 'exposure, threats, capacities, and outcomes' (p. 9). Using one case study in Britain and one in Indonesia, they highlighted the specific processes through which vulnerability is created. This is similar to Grundy (2006), although Grundy draws on the development studies literature and utilises data from different surveys. Schröder-Butterfill and Marianti note the weaknesses of their simplistic conceptual framework, stating that it does not capture a life-course approach or external factors that may influence vulnerability. Grundy (2006) applies this framework in her study of elderly people in Europe, while Schröder-Butterfill (2006) applies the framework to Indonesian

In another study that includes Schröder-Butterfill, concludes that vulnerability is to be determined by complex interactions of discrete risks, exposure to the threat, and weak coping mechanisms (Schröder-Butterfill and Marianti, 2006). In studying elderly Europeans, Grundy (2006) applied Schroder-Butterfill's (2006) old-age vulnerability framework and concluded that 'vulnerability is falling below the threshold needed to cope successfully with the challenges that they face' (Grundy, 2006: 107).

In the economics literature, the empirical applications of economic vulnerability are more or less similar based on the dynamic nature of vulnerability and the notion of risk. This concept of risk is basically followed by the responses to such risks in the form of coping instruments conceptualised as risk management activities undertaken by households. While conceptually sound, the complexity of the 'risk, shock, and outcomes' definitions may have limited empirical applications in the literature as I found very few and often dated static studies of vulnerability in the economics literature (Chaudhuri et al., 2002;Lloyd-Sherlock, 2006;Pritchett et al., 2000;Gould and Cooper, 2013). As I discussed earlier, in social gerontology, very few researchers apply the notion of vulnerability or economic vulnerability to study older people. In light of this complexity in conceptualising vulnerability, **how then should economic vulnerability be operationalised in applied work? Which measure of economic vulnerability is most appropriate? In the next section, I examine the applied economic vulnerability literature.**

2.1.2 Operationalising Economic Vulnerability

Alwang et al.'s (2001) study entitled 'Vulnerability: A View from Different Disciplines' is possibly the most comprehensive review of the vulnerability literature to date. The authors examined seven disciplines – economics (development studies), sociology, anthropology, disaster management, environmental science, health and nutrition – to identify differences among conceptual/operational definitions of vulnerability using an organising framework of *'risk', 'responses', and 'outcomes'*. The authors found that in the development studies literature, the welfare outcomes form the benchmark from which one can infer increased or decreased vulnerability. More advanced applications utilised econometric models to measure economic vulnerability. These studies are typically based in economics and its sub-discipline of development studies. In the existing literature, economic vulnerability has been utilised using money metric measures such as income or consumption, and assets.

Economic vulnerability studies on individuals and households apply econometric model to measure economic vulnerability, as can be found in Maitre et al. (2012) and Gesthuizen and Scheepers (2010). One notable study in the United Kingdom by Whelan and Maître (2005)

operationalised economic vulnerability as a latent construct comprising of household income, economic strain, and current lifestyle deprivation. In a study of European countries using the EU-SILC (Statistics on Income and Living Conditions), Maitre et al. (2012) view 'economic vulnerability' as 'household-level economic disadvantage'. In their study of low-educated Europeans, Gesthuizen and Scheepers (2010, p.248) state that 'economic vulnerability becomes more likely if one is unable to generate enough income, and/or if expenses and needs are too high'.

Much of this vulnerability literature focused on distinguishing the notion of vulnerability from poverty in its empirical applications. In my view, this distinct focus to distinguish vulnerability from poverty may have hindered its usefulness beyond a mere conceptual framework. For example, Dercon (2001) presents an econometric framework for assessing vulnerability. The author shares the main conceptual view in the literature that vulnerability has three main components: the sources of livelihoods, the risks that individuals encounter, and their resilience to face the risk. However, in describing those that are vulnerable, the author uses the terms that are more akin to the poverty literature, such as the permanently poor, temporarily poor, and transitory poor. Put in this way, its approach is no different from that of the dynamics of poverty literature. The author is adamant that vulnerability is not simply another dimension of poverty but that '…it is also a cause of poverty and destitution' (Dercon, 2001, p.1).

Dercon further argues that by introducing various multi-faceted risks and coping strategies, vulnerability becomes distinguishable from poverty. This is a fair point; however, the author then goes on to say that vulnerability must be benchmarked to something; some examples are, vulnerability to poverty, vulnerability to poor education, or vulnerability to poor health. I maintain that, it is this emphasis on benchmarking that has been a weakness of the usefulness of the concept of vulnerability. It would have been better to present vulnerability as a stand-alone concept rather than subjecting vulnerability to an arbitrary benchmark or a pre-defined threshold. In the poverty literature, there is good evidence on the weaknesses of using pre-defined levels to assess poverty (Appleton, 2001;Barrientos et al., 2003).

Caroline Moser (1998) takes a more theoretical view similar to Chambers. She extends her definition of vulnerability to depict the various possibilities to which a particular actor may adapt to such a risk– something she refers to as 'sensitivity' and 'resilience'. From the author's study of four urban communities of Ecuador, Zambia, the Philippines, and Hungary, she developed a theoretical asset vulnerability framework, which combines both objective and subjective measures of vulnerability. Although, this framework is conceptually sound, it is complex and is primary focus on assets makes it difficult to apply in developing country contexts. For instance, Lloyd-Sherlock (2006) applied Moser's asset-vulnerability framework in

an economic vulnerability study of Thai elderly and found it to be very data-demanding and inefficient.

In developing country contexts, the issues of applying asset measures to a study of vulnerability are well-documented (Dercon, 2001;Echevin, 2011). The complexity of the author's vulnerability framework also has the weakness of being empirically difficult to apply. These highlighted issues in defining and applying vulnerability frameworks may have minimised the usefulness of the notion of micro-level vulnerability in the academic literature. The unsuccessful exercise in separating vulnerability from poverty could be one main reason why studies of vulnerability are less visible in the economics literature compared to poverty studies. Another weakness is that these definitions often result in complex conceptual frameworks which are very data-intensive to apply to available developing country data. In quantitative work, incorporating other elements of risks, shocks, and stress would require longer-term data and high-level modelling techniques.

2.1.3   Which measure of economic vulnerability is most appropriate?

In recent years, many applied researchers have been less concerned with a theoretically-grounded definition of vulnerability, and they prefer to define vulnerability in simpler terms. For example, Gould and Cooper (2013) assess vulnerability based on a poverty threshold definition: economically vulnerable elderly are defined as those having an income that is less than two times the supplemental poverty threshold.

Grundy (2006) examines the processes of vulnerability of elderly people in Europe by using a conceptual framework by Schröder-Butterfill and Marianti (2006). The author pays particular attention to the dynamic process that leads to vulnerability. Using models of the ageing process, Grundy identifies the vulnerable elderly, defined as those that fall under a socially-defined threshold—otherwise known as reserve levels. She posits that by identifying the reserve levels, policy initiatives can be targeted to those that are likely to not have adequate reserves. Drawing on practice-based experience and elderly people's views, the author identifies the following sociological elements as important for elderly people's wellbeing: 'material resources, family, friends, and social ties, care, health, opportunities for autonomy, and self-actualisation'.

Drawing on various household surveys in Western Europe, Grundy focuses on Britain but makes comparisons to other Western European countries: Austria, Germany, Sweden, The Netherlands, Italy, and Portugal. She emphasises the role of environmental challenges as important in determining vulnerability and reserve capacity. Using mostly graphical representations, the author identifies the most vulnerable elderly as those that are very old, with

low incomes, those that are socially isolated, those who live alone, and those that have limited access to opportunities to exercise autonomy. One weakness of the study is that the conceptualisation of the reserve capacity is complex, and it shares the weakness highlighted in the vulnerability literature found within economics. Moreso, its use of certain contextual elements and multi-year data is likely to make it difficult to apply to a developing country context. At least from an objective perspective, Grundy's study has shown that it may be possible to use household datasets to identify vulnerable elderly based on age and levels of income.

2.1.4 Assets as a measure of economic vulnerability

Lloyd Sherlock's (2006) study on Thai households examined economic vulnerability of elderly Thais using both the poverty lines and Moser's (1998) asset vulnerability framework. One of the other aims of the study was to determine how well assets explained the differences in economic vulnerability, and the author found the asset framework to be a very problematic approach to use to study the poor Thai elderly (Lloyd-Sherlock, 2006). I do not dispute the importance of assets in the lives of the poor—where there are functioning formal markets, assets could serve as a safety net, but the operative phrase is 'functioning formal markets'. More so, the evidence on the importance of assets as a money metric measure for household welfare in developing countries is divisive.

Moser's notable work on four urban communities in Ecuador, Zambia, the Philippines, and Hungary presented the asset vulnerability framework (Moser, 1998). The author argues that assets mostly play a consumption smoothing role in times of temporary or persistent hardship. Echevin's (2011) paper analyses the dynamics of vulnerability to asset poverty in Ghana using the Ghana Living Standard Survey (GLSS) using three rounds of household data (1991/1992, 1998/1999, 2005/2006) and demographic health surveys in five countries. The author estimates the vulnerability gap and asset index using the probability that someone will be vulnerable. These studies also note that for assets to be a reliable safety net, they need to be capable of generating income and other economic advantages.

As a measure of economic vulnerability, asset poverty has been defined as a household's inability to access wealth resources that are sufficient enough to provide for basic needs for a period of three months (Havemen and Wolff, 2004)[17]. Haveman and Wolff analyse the determinants of asset poverty in American households using data on home ownership, net value of farm and business assets, stocks, checking and savings accounts, and investment stocks. The

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[17] Basic needs refer to the minimum standards for consumption defined by the World Bank as either $1 per day or $1.25/day.

authors imply that during temporary hardship, assets can be transformed to meet consumption needs. But some households are economically vulnerable because they have insufficient assets to meet basic needs. Critics of the asset-vulnerability argument argue that these characteristics make it a weak measure of the economic vulnerability of people—particularly among the poor.

In contexts of poverty, poor people find it difficult to accumulate assets, reducing its status as a livelihood strategy for the poor. There is also the issue of transforming the asset, which would require access to formal markets. Dercon (2001) noted that the levels or current values of assets are not the most crucial; but that it is more important to consider whether those individuals can mobilise them when required in times of adversity. According to Banerjee and Duflo (2007), many households in developing countries lack access to formal credit and savings markets. Mitchell et al. (2008) report certain instances where vulnerability actually intensifies as asset holdings increase. Citing Luka Deng's work on South Sudan, assets increased the vulnerability of wealthy households during the 1980's, and these households became a target for cattle rustlers and insurgency groups, underscoring the importance of enabling markets.

One commonly proffered argument in favour of an asset approach is that it avoids problems associated with measurement errors which plague household income. The weaknesses of income measures have been well-documented in the literature, but this has often been circumvented by using household consumption expenditures (see Deaton 1992, 1997). Given this issue of asset identification and the macroeconomic issues that would be difficult to control for, assets has been viewed in the empirical literature on developing countries as weak proxies of economic vulnerability among older people. In the next section, I review studies that use consumption or income indicators for examining the economic situation of the elderly or elderly households.

2.1.5   Using poverty thresholds to measure economic vulnerability

According to these studies, money-metric measures are an objective way of studying economic vulnerability, financial wellbeing, or economic wellbeing of the elderly and their households. Although, there are differences in terminology, they all pertain to understanding the material welfare of elderly people.

Elsewhere in the US, a key study by Rubin (1997) used data from the Bureau of Labour Statistics (BLS) Consumer Expenditure Survey to analyse economic vulnerability amongst elderly people. They identified poor elderly by comparing them with the federally defined poverty line, and to ascertain through consumption patterns the determinants of economic vulnerability. Butrica et al. (2005) use expenditure pattern information on US retired elderly to

understand the consumption needs in later life. They extend the use of the expenditure patterns information to identify economically vulnerable elderly using a consumption needs threshold from descriptive statistics (median per capita expenditure) which they compare with cost of food measures used by the US's department of Agriculture to allocate food stamps.

Alam (2006) identified vulnerability based on how individuals fall below a threshold level of goods and services necessary to meet basic minimum human needs among older people in India. Chaudhuri et al. (2002) undertook a study of vulnerability among Indonesians using a cross-sectional survey from the Mini-SUSENAS Survey 1998. In their study, the authors developed a poverty and vulnerability profile of 22% and 45% respectively. The authors estimated the vulnerability indicators based on ex-ante poverty headcounts. Based on this approach, some households may be non-poor ex-post but be vulnerable ex-ante based on the probabilities that they will fall below the poverty line in the future. Another similar study is Pritchett et al. (2000).

Using the EU statistics on income and living conditions (EUSILC) 2008 data for Ireland, Whelan and Maître (2005) identified economically vulnerable groups among 12,551 individuals within the context of social exclusion and potential public expenditure cuts in Ireland as the recession emerged. The authors operationalised a latent construct as a combination of: household income, economic stress, and lifestyle deprivation. Besides household income, economic stress and lifestyle deprivation were defined as subjective measures. Forty-two lifestyle deprivation indicators and three financial pressures indicators (mortgage payments, self-reported debt problems, and housing costs) were utilised. Economic vulnerability was differentiated from income poverty, and vulnerable groups distinguished from non-vulnerable groups based on the relative risk to high deprivation. In their latent model, they found that at the 60% income threshold 18.7% of individuals were to be economically vulnerable while only 14.4% were below the income poverty line of 60% of income threshold. In other words, you can be poor but not be vulnerable, and you can be vulnerable but not poor. The study also found that the main determinants of economic vulnerability where exclusion from labour markets, lower social class, and local authority housing. And as much as the authors make a concrete attempt to highlight that economic vulnerability is multi-faceted, they concede that income is a main contributory factor to economic vulnerability.

However, in one review of the empirical vulnerability literature, Dercon (2001, p.35) is not convinced that using such indicators is suitable because there are certain to be prediction errors in the estimates. This shortcoming of prediction errors has led to researchers advocating for direct modelling of consumption to investigate household welfare. For instance, Appleton (2001) estimates three household welfare measures empirically—poverty headcount, poverty

gap and consumption measures; and found that modelling consumption expenditure directly into poverty models is a more superior approach to the poverty estimation measures, while controlling for other explanatory variables in an econometric model. The fact that consumption allocation can also determine poverty has an implication for the model development in the study. From the theoretical definitions of economic vulnerability discussed in Section 2.1.1, it makes sense that those households that are already poor are likely to be more economically vulnerable than their wealthier counterparts. Therefore, it is reasonable to control for household poverty but its relation to consumption may introduce high levels of endogeneity which could yield inconsistent results. I return to this issue further in Section 5.2.

Linked to this issue of using consumption expenditure in applied work, is the debate of whether consumption is a more superior measure compared to income in identifying economically vulnerable groups. The superiority of consumption data over income has been well-documented in the empirical literature both in developed and developing countries.

2.1.6   Consumption allocation as a measure of economic vulnerability

The use of the concept of consumption serves a functional purpose in research. Early empirical macroeconomic studies often described consumption as a 'constant price aggregate of expenditures' for various goods and services in the economy and microeconomic theorists applied the same concept to individual and households (see Deaton, 1992 for a comprehensive review). In many ways, consumption expenditure data could help further our understanding about the determinants of economic vulnerability among the elderly but like any money-metric measure, it has its strenghts and limitations.

Using US micro-data, Meyer and Sullivan evaluated the merits of income and consumption based measures of wellbeing. They presented strong evidence to indicate that for poor US households, income measures is a more problematic measure of wellbeing due to issues of under-reporting (Meyer and Sullivan, 2003, 2011).

Deaton (1997) strongly advocates for the use of expenditure data instead of household income data, because expenditure per capita is subject to less variability and measurement. According to Deaton, many developing countries are characterised by a low savings culture, with most households diverting most of the household resources directly into consumption. This strength of household consumption in minimising measurement bias compared to household income has been extensively discussed in the economics literature (Deaton, 1997;O'Donnell et al., 2005;Meyer and Sullivan, 2003, 2011). According to these authors, consumption is more representative of economic welfare. In applied econometric work on household poverty in

Nigeria, the use of consumption expenditure is the norm due to its completeness compared to income data (Okojie, 2002;Anyanwu, 2005, 2011, 2014;Appleton et al., 2008).

Abdel Ghany and Sharpe (1997) in their study of elderly households, and poor and non-poor households respectively, suggest the use of a 'double hurdle' approach (p.17), which examines both expenditure and income levels in identifying poor and non-poor individuals in the US – this approach looks at the relationship between both – if positively significant then total expenditure (as a proxy of income) is a significant explanatory factor for various expenditure categories. These consumption studies on the American elderly, such as Abdel Ghany and Sharpe (1997) and Butrica et al. (2005) used sophisticated regression techniques to establish the relationship between consumption expenditure and sociodemographic variables, and to determine the consumption needs of retired elderly in the United States. This discussion leads on to the next question of: why are some older people are more economically vulnerable than others?

2.2   Why some older people are likely to be more economically vulnerable than others?

In Chapter 1, I highlighted the criticisms against the advocacy literature on older Africans, which tends to underplay the diversity of vulnerable older groups. This diversity of older groups can help to explain why some urban elderly Nigerians may be more vulnerable than others. Some examples of socio-demographic factors include: age, and gender. These socio-demographic factors may manifest themselves at the individual and household level. Besides income, some socio-economic characteristics are likely to be important in explaining economic vulnerability differences among older people. In Sociology, the main socio-economic characteristics are often viewed to as 'occupation, education, and income' (De Vos, 2005, p.88). In the next section, I briefly review studies within economics and sociology which provide supporting evidence for the inclusion of these factors as possible determinants of economic vulnerability. According to these studies, older people as a demographic group exhibit certain disparities across socio-economic classifications.

2.2.1   Old-Age and Economic Vulnerability

Age is an important variable in understanding the welfare differences among older people. Earlier, I discussed Grundy's (2006) study on older Europeans, which identified vulnerable elderly based on those that are very old. Theoretically, household welfare increases with age due to asset accumulation and experience of the individual. Income begins to decline due to withdrawal from the labour force and declining productivity at older ages (Modigliani and

Brumberg, 1954). This relation gives the 'hump' often explained in the literature (Deaton, 1992;Börsch-Supan, 1992;Alessie and De Ree, 2009). Based on this accepted theory, it has become quite orthodox in the empirical literature to control for age in a household welfare model and as an important determinant of elderly household welfare in developing countries (Deaton and Paxson, 1995;Deaton and Paxson, 1998b;Duflo, 2003;Maitra and Ray, 2003;Van de Walle, 2013;Woolard and Klasen, 2005).

Age effects are important in understanding the economic situations of elderly people. On a societal level, It can determine how much support is given to older people (Harris, 2007) and how much access some may have to income generating opportunities (Maharaj, 2012). Barrientos et al. (2003), in their review of old-age poverty studies in developing countries, found evidence of a decline in economic opportunity with age. The authors use household surveys pulled from different sources to show that that poverty increases with age. Using a survey of 503 people aged 60 years and over in Thailand, Lloyd-Sherlock (2006) found age differences in economic vulnerability among the elderly.

A key question here is when old age starts. This definition is bound to vary based on the context. I examine this old-age starting point debate in the next section.

2.2.1.1 Who is an older person in an African context?

The World Population Ageing Report posits that '50 years' to be the lowest retirement age in Nigeria, Kuwait, Kiribati, Swaziland, and Solomon Islands (UN, 2013), p. 55). While the key stakeholders in the WHO's minimum data set project (WHO-SAGE) on older people (1995-2003) strongly advocate for the development of a separate criterion for Africa based on 50 or 55 years (WHO, 2010). Lower life expectancy in many African countries is the key reason cited for a lower age-cut off point for re-defining the classification of older people. This WHO communiqué continues to influence the research studies based on the SAGE dataset in Africa. Unfortunately, the data has not been collected on Nigeria to warrant its use in this study. The WHO report further identifies two sides of the old-age cut-off point debate in the literature - those who argue that age should be contextualised because information on elderly people could be lost for countries with low life expectancies, and on the other hand, those that argue that doing so will impair international comparisons or comparisons with other body of work (ibid).

There are merits and demerits of using a context-specific approach. However, the merits far outweigh an age-cut of point that is not representative of the ageing context. As I will find, there are indeed difficulties in making comparisons with official statistics in Nigeria. In fact, in some cases I had to increase the age cut-off to the official retirement age of 60 years to ensure

that the analysis was comparing 'like-with-like' in Chapter 4. Nevertheless given Nigeria's low life expectancy of 51 years[18] reported by the World Bank in 2010, and the body of evidence suggesting that old age begins much earlier in Nigeria, there is a stronger basis for applying a context-specific age criterion for majority of our analysis.

For instance, one study that addresses the definitions of old-age in applied work is Ezeh et al.'s study on elderly Kenyans in (Cohen and Menken, 2006). Using focus groups and interviews, the authors asked elderly people themselves to identify the meanings that older people assign to being old. They found that older people viewed 'old age' based on social definitions, and in the authors' words "as a process and a stage" characteristic of an end of reproductive capabilities. Physical characteristics were described as important as well as functionality and increasing financial independence. Although, the authors argued for a lower age starting point based on their findings, they chose to still use the convention of 60 years and over, in the quantitative part of their study. Although, they do not elaborate on this change of approach, it may be simply down to editorial preference as all the other articles in the Cohen and Menken's book utilised the age of 60 years and above to refer to the elderly.

A recent study by Hunter and May in (Maharaj, 2012) found that those aged 50-59 years old (a group they call "near-old) in South Africa share characteristics which differed from younger age groups. Elderly South Africans regardless of their background are entitled to the State's old age pension (OAP), payable to elderly from the age of 60 years. It is within this context that they examined the economic status of the near-old before they become eligible for the OAP. Using a life-course framework and the National Income Dynamics Study, they investigated the employment, health status, and income of near-old South Africans. The authors asserted that including the near-old in any analysis of the economic situation of elderly in Africa provides a better opportunity to mitigate old-age poverty. In all indications, context matters in applying definitions of old age. From a contextual standpoint, most of these studies on African elderly suggest that, perhaps the most appropriate method in studying older people in Africa is to use a lower starting age for older people. Therefore, this thesis will further consider the suitability of the starting point of 50 years for old age for urban elderly Nigerians in Chapter 4.

2.2.2   Gender and Economic Vulnerability

With respect to gender, feminist theories of ageing prioritise gender as a factor that can affect the experience of ageing (Calasanti, 2010b, a). These theorists take the position that gender relations can identify differential ageing experiences between men and women; and women's differential access to material resources (Giddens, 2009;Johnson et al., 2005a). Other examples

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[18] http://data.worldbank.org/indicator/SP.DYN.LE00.IN

can be found in sociological studies where household decision-making status is inferred from gender-based assignments of domestic labour (Giddens, 2009, citing Stroller, 1993; Oppong, 2006).

Gender is now widely recognised as a variable that can influence economic welfare outcomes, and as such it has become common practice to control for gender in applied work. In particular, the role of female household headship has been well-debated over the years.

In one study by Okojie (2002), the author also found that female-headed households are more likely to be poor compared to MHHs in all four survey periods. Mberu (2007), drawing on data from a Demographic Health Survey in Nigeria, found a similar result. The gender variable is a dummy that could highlight any gender disparities that may exist between female headed elderly households compared their male elderly counterparts. Anyanwu (2011) also found a similar result. Conversely, some researchers have found contrary evidence in other SSA countries— many of these studies are somewhat dated. These authors surmise that FHHs are not in the majority among poor households in Africa. Appleton (1996), using the 1992 Integrated Household Survey in Uganda, found contrary evidence. The author did not find any significant gender differences in consumption or income levels in Uganda, although, in urban areas, it was found that female-headed households and households headed by widows had lower economic welfare.

In Malawi, one study by Mukherjee and Benson (2003) on the determinants of poverty found inconclusive gender differences. The study draws data from the 1997/98 Malawi Integrated Household Survey. They also use model simulations to analyses effects of poverty changes on certain household characteristics such as education and labour employment.

As thesis is not primarily focused on providing a gendered perspective on economic vulnerability, the review of the relevant studies above is rather brief. However, it cannot be disputed that although the feminist economics literature has generated mixed evidence in many African settings, there is no disputing the importance of gender differences in economic welfare outcomes. Therefore, it has become good practice to control for gender in any household welfare model. This thesis does not depart from this approach, and in developing the models in Chapter 6 and 7, gender will be controlled for, as the exclusion of the variable may cause significant omitted variable bias.

2.2.3 Education, Occupation and Economic Vulnerability

In this section, I review studies that have been able to identify unique socioeconomic factors including owning a home, that are associated with old-age economic vulnerability. Although these studies do not categorically examine economic vulnerability, they relate to welfare outcomes which affect older people.

Educational Achievement and Economic Vulnerability

There is a clear consensus about the importance of education in any economic welfare study on individuals or households. The human capital theory surmises that education is a key determinant of household income (Becker, 1964). According to Becker, there is a positive relationship between educational acquisition and wage earnings. Using Consumption Expenditure Surveys in Nigeria over four periods (1980, 1985, 1992, and 1996), Okojie (2002) found that education reduced the likelihood of household poverty in Nigeria. Elsewhere in Africa, Mukherjee and Benson (2003), using data from the 1997–98 Malawi Integrated Household Survey found that educational attainment would be poverty-reducing in Malawi.

Similarly, education has been found to improve household economic welfare in Cote D'Ivoire (Grootaert, 1997). Citing an earlier study, Appleton (2000) presented evidence to show that there are positive returns on household welfare in Sub-Saharan African countries from receiving secondary education schooling.

Himaz and Aturupane (2011) examined the impact of education on household economic welfare in Sri Lanka using household surveys from 1985 to 2006. The authors applied quantile regression techniques and found that there is an incremental value in household welfare with an extra year of education, suggesting that educational acquisition is important in the labour market.

Occupation and Economic Vulnerability

As an older person, what one is doing or did in the labour market is also important. Some occupations have been found to command higher earnings than others based on the level of skills demanded by labour market forces. For instance, in much of Africa, farm income has been found to be lower than non-farm income (Fox, 2015;Zimmer and Das, 2013). In Nigeria, Appleton et al. (2008) found significant income differences between those in agricultural occupations and those in professional occupations.

According to Alem and Söderbom (2012) labour market status affects consumption levels. In their study of urban Ugandans by using household surveys in 2004, 2004, and 2008 and OLS regression analysis, they found that those in the labour force had higher consumption growth rates compared to those out of the labour force. In addition, public sector workers and casual workers where most affected by food price shocks. This evidence suggests that what one does in the labour market is likely to be important in understanding old-age economic vulnerability.

The evidence on education and occupation on economic welfare in African contexts is conclusive, and it would be problematic to exclude these variables as potential determinants of economic vulnerability. In the following chapters of the thesis, I further examine their importance empirically. In addition, some of the studies in this review have noted that, economically inactive individuals may have alternative sources of income which may be important. One alternative source of income is household rental income. In Chapter 4 and 5, I also examine rental income, which may not be influenced by education and occupation. By doing so, and as these studies have done, I can control for omitted variable bias. In addition, some of the studies in this review have highlighted the problem of measurement errors in using income measures. I further examine the completeness of the income data in Chapter 4. In later empirical chapters, identifying potential basic and underlying determinants of economic vulnerability will enable a more robust model in confirming their function as determinants of economic vulnerability.

2.3   **Linking Health to Economic Vulnerability**

Most of the studies in this review agree that economic vulnerability is bad for welfare. Dynamic studies of economic vulnerability have attempted to uncover causal explanations for long-run economic vulnerability on individuals and households. However, not many studies have examined the health-related consequences of economic vulnerability of older people, per se. Studies on the links between economic resources and health status and health spending are the related companions to this area of interest. This section reviews some of the oft-cited relevant studies in the field of health economics.

2.3.1   Theoretical Explanations

2.3.1.1   *Grossman's health model*

Ever since Grossman (1972)[19] formulated the demand-for-health model, many researchers in economics, sociology, and public health have documented the shape and nature of association

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[19] Mushkin (1962) is credited with first proposing the notion that a person's individual health may be conceptualised as an investment. Other economists such as Becker (1964) and Fuchs (1966) offer a

between economic resources, health demand, and health determinants (Feinstein 1993; Adler et al., 1993; Benzeval et al., 2001; Case et al., 2002; Burgess et al., 2004). Grossman's health model has its origins in the human capital theory, which views human capital as productive capacities of individuals which enable income generation (Rosen, 1987). Viewed in this way, health is a stock, which is linked to the productive capabilities, just like education is linked to productivity and economic growth.

$$U = U(H_t, Z_t), t = 0, 1, 2\ldots, n \quad,$$

where H is the health capital stock at time t which produces some welfare benefits. Z is the consumption of all other goods at time t which do not contribute to health capital. Most health economics studies specify a health production function following Grossman's (1972) empirical formulation (see Wagstaff, 2002 for a detailed discussion), in which health is viewed as stock, according to the following relationship:

$$H_t - H_{t-1} = I_{t-1} - \delta_{t-1}H_{t-1},$$

where H_t is health stock at time t, I_{t-1} is the gross investment during the period $t-1$, and δ_{t-1} is the rate of depreciation during $t-1$. According to Grossman, δ is dependent on age and is exogenously determined. In this empirical model, a person's individual utility and income are both increasing functions of H_t. In this model, there is an equilibrium stock of health capital which an individual will want to hold in order to maximise utility subject to budget constraints.

Therefore, there is an optimal path of H_t which forms the individual's investment profile. It is assumed that this path can be manipulated by the individual to keep it at an optimal level, through increasing or decreasing some health investments over a period of time by greater or less than the amount of depreciation. Depreciation can occur as a result of specific factors, such as age, that are likely to affect elderly people, suggesting that elderly people would need more health investments to counteract the levels of health depreciation experienced in old-age. According to Grossman, these health investments typically depend on education rather than income or wealth. Viewed in this way, individuals may maintain health by consuming more medical care. The assumption that demand for medical care depends on good health demand has been strongly criticised. Staunch critics of Grossman's model are Zweifel et al. (2009). The authors principally reject this core proposition of the model. They draw on empirical literature to present counter-intuitive evidence found in other studies in the literature.

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similar view. However, Grossman (1972) formalised these ideas using an intertemporal maximisation model.

More specifically, they maintain that there is a negative relationship between health demand and health status rather than a positive relationship, implying that health status did not explain medical care demand in the fashion predicted by Grossman's model. On the other hand, in a recent study by Galama and Kapteyn (2011), they found that Grossman's model does predict a positive relationship between health demand and medical care over the life-cycle but it does not follow the optimal path prescribed by Grossman. They argue that it follows a health threshold pattern where people begin to demand health only when their health deteriorates to a certain threshold level. Other criticisms over the years are based on the assumption made about constant health returns (Ehrlich and Chuma, 1990). Case and Deaton (2005) criticised the model's assumption that there is always a state of health investment or consumption that brings health back to its original equilibrium state, stating that it is unrealistic. Linked to this criticism of this model is that individuals do not actually adjust their health stock in such an instantaneous way, as prescribed by the deterministic model.

Some of these criticisms have led to the extension of the model by other researchers (for example, (Muurinen, 1982;Wagstaff, 1986), even by Michael Grossman himself (Grossman, 2000). Grossman had earlier proposed in his 1972 model that health can be viewed as both consumption good and an investment good (p.225), in which the former enters into the preference function which directly affects utility. The former depends on time allocation decisions and is expressed as time lost due to increases in health stock. In his 2000 study, he formally tests both aspects individually and reports that the model produces the correct sign some of the time when health is viewed as an investment rather than something that is being consumed for utility. This position amplifies Grossman's stance that health is a pure investment good rather than consumption good. Grossman (2000) asserts that the investment model is preferable because his model '[…] generates powerful predictions from simple analysis and less innocuous assumptions'.

In practice, studies that estimate Grossman's model typically use multi-period data to empirically investigate the health demand determinants over the life-cycle. For a long time, it was assumed that the model could be applied to determine causal links with only longer-term data. Of relevance here is the theoretical study by Muurinen (1982), which is arguably the first attempt at conceptualising a static and generalised version of Grossman's model. The author addresses two main criticisms of Grossman's model: 1) the author maintains that consumption and investment aspects of the model are actually not independent of each other, as Grossman assumes that health is for both consumption (utility) and for functional capabilities (production) and that these are the key drivers of health demand; 2) Grossman's use of education as a productivity factor in the household production function is limiting. According to Muurinen,

education is not only linked to household production, but it also has an allocative efficiency function. It can influence lifestyle choices which indirectly influence health status, and it can also improve efficiency of use of modern medicine based on access to medical knowledge, which can also influence health.

Grossman's model assumes that environmental variables do not affect depreciation rates, but they only affect the household production function similar to the influence of medical care. Muurinen argues that this assumption about environmental factors is faulty. Environment variables can lead to inefficiency of health which should be viewed as affecting the rate of depreciation rather than simply as an input which produces health. This theoretical extension has enabled static analysis of health in contexts with limited longitudinal data and minimal health investments. Moreso, it ignores time prices and models both the consumption and investment aspects simultaneously in the author's generalised demand model.

The investment model does not apply universally and its use is limited in certain contexts, with respect to investments in health, in developing countries where health investments are typically very minimal. The consumption model has been suggested as a better indicator of health demand in contexts where investments are minimal and can be subject to external factors which are harder to observe whilst consumption adjusts with changes in living standards. In the next section, I discuss the empirical literature that examines the links between income and health in developing countries. Due to the sparse literature, I also discuss some relevant studies on developed countries.

In conclusion, Grossman's model is arguably one of the most influential models in health economics and has been widely applied in various health sub-disciplines. Culyer and Newhouse (2000) has a collection of 35 well-cited studies in health economics. More than half of the studies in the handbook make reference to Grossman's theoretical basis. In all indications, one of the strengths of Grossman's theoretical framework is that it is easy to adapt due to its similarities with the educational production function; it therefore makes it a popular choice with empirical researchers in the health economics literature.

However, one weakness of Grossman's approach is that prices are often not known. According to the economic tenets of the general consumer demand, health expenditure is a function of the quantity of health services purchased in the health care market, prices, income, and consumer preferences, subject to a budget constraint. In addition, in developed countries with developed health insurance markets, external parties determine a share of the health expenditure. In light of this, a behavioural analysis was developed by Andersen and Newman (1973) as a conceptual framework to study medical utilisation. The conventional approach in the literature that

examines health care utilisation is to use Andersen's behavioural model to examine medical utilisation patterns and health expenditures.

2.3.1.2   Andersen's (1968) Behavioural Model

In the late 1960s, Ronald Andersen developed a behavioural model to aid the understanding of the key drivers of formal medical care use (Andersen, 1968). One of the strengths of the model is that it takes the family or the household as the key economic unit, making it useful in developing country contexts, although the author initially applied it to United States data and then extended the model to individual level analysis.

Another strength of the model is that the early empirical studies have been able to report reasonably strong explanatory power of the model in explaining variations in the use of health services (see Chi and Hsin (1999) for a review of this early literature).

Andersen's (1968) behavioural model consisted of three aspects: need for care variables, predisposing variables, and enabling variables. All of the variables influence the variations in medical utilisation. In spite of the elegance of the model, the main criticisms levelled against the behavioural model over the years are that it focuses solely on formal care which is measured by physician visits and hospitalisation and that the measures are too conservative given that formal care is not the only source of medical care available in certain contexts. Some studies have highlighted the role of social factors which can affect consumer preferences in relation to the perceived utility of medical care. This neglect of social and cultural factors has meant that from a policy perspective, estimates of variations in health care utilisation are misleading. In recent years, medical sociologists and public health researchers have extended the model to incorporate these aspects of access to medical care (Andersen (1995) provides a thorough discussion of the model developments over the years).

For health economists, I observe that the consumer demand model remains the main theoretical framework. Some studies have incorporated Anderson's model as a useful conceptual framework in identifying potential determinants that may influence health demand. Health expenditures have been modelled as a proxy for health use in some studies (Chi and Hsin, 1999). Given Andersen's model, it is this study's view that health expenditures capture those that have actually used different types of health services, thereby removing the formal health care restrictions that Andersen's model imposes. It also means that the heavy data requirements needed for Andersen's model, can be ignored. Nevertheless, the usefulness of Andersen's model lies in the potential key drivers of health use and, by extension, health spending. It is in this way that the health economics literature has typically applied the model in developing country contexts where data on health use is very limited. These studies typically draw on the

model to identify possible determinants of medical utilisation, health expenditure (Brinda et al., 2014), or both, as in the study by Chi and Hsin (1999). One of the strengths of the behavioural systems approach is to identify the socio-economic and demographic factors that need to be controlled for, to reduce the impact of omitted variable bias in health modelling. In Section 7.7.1, I follow convention in applying the Andersen model to select controls to address the second primary question of the study.

2.3.2   Empirical Literature

Benzeval et al. (2000), Case (2002), and Case and Deaton (2005) have shown that cross-sectional data can be used in static analysis to estimate health production functions using reduced form model specifications. Since then, there has been a growing body of evidence on cross-sectional analysis of health data (O'Donnell et al., 2005), enabling the study of health in developing countries where longer term data is often sparse.

Related to the literature is a strand in the public health approach which examines inequities in health care, health status and health spending, and the link between health and economic welfare outcomes. Typically, various studies draw on theoretical frameworks, but most that apply econometric models utilise Grossman's model as the main underlying theoretical framework.

Having discussed the main theoretical framework in the health demand literature, I discuss relevant empirical literature that has examined the economic vulnerability-health paradigm. Since Grossman formulated his model more than 40 years ago, there have been a plethora of applications in the empirical literature. I therefore limit this study's scope to those that analyse the consumption aspects of the model rather than the investment aspects of the model, as the former is most related to this current economic vulnerability study. I do not attempt a systematic review of the empirical literature, as this study's aim is to summarise the main approaches utilised in the literature.

2.3.2.1 Economic Vulnerability-Health paradigm

At a basic level, these studies suggest that wealthier households are more likely to have healthier household members because they have more income to access health care. Studies differ based on the economic units of analysis and health and income measures. These disagreements in the literature about the latter approach lie in the income metrics, the reliability of the self-reported health measures, the shape and nature of the income-health relationship, and the complexities inherent in untangling causal links.

Does economic vulnerability (through consumption allocation) affect health? The role of income in protecting health has been well-documented in (Feachem, 2001, citing Pritchett and Summers, 1996). With respect to income measures, the literature can be dichotomised into two

main types— absolute income studies and income inequality effects studies. The former focuses on individuals and groups, while the latter focuses on an entire population. The research design therefore differs as the former analyses data on an individual or household level, and the latter typically uses averaged population data. This study is primarily a micro-level study; therefore, I focus on micro-level studies in the literature.

Using an integrated family survey collected in 1999 of 300 households, Case (2004) quantifies the causal income-health effects that arise following the receipt of the old age pensions in South Africa[20]. The study utilised SRHS and anthropometric scores for all adults. The author finds that income does have protective effects on health, and that these effects even extend to all household members, but only in households that pool income.

The author asserts that the protective pathways are in three aspects: nutritional status, household living standards, and day-to-day stress of life. I note one key feature of this study that limits generalisations to other elderly people in developing countries. Firstly, South Africa is culturally different from West African countries on two dimensions: South Africa uses a race classification based on Blacks, Coloured, and Whites, and as such the socio-economic status reported is higher overall. Indeed, it is not surprising that the author compares elderly groups with elderly blacks and whites in the US.

In the author's later study with Angus Deaton, this socio-economic status difference was confirmed in their cross-country study in India and South Africa, where in all three measures— income, education and health— India had significantly worse outcomes than in South Africa, including higher levels of poverty (Case and Deaton, 2005a). Household size played a key role, as older adults in larger households reported better SRHS and less ADL limitations in South Africa. The author examined the role of sanitations, which depended on pension income. The author found positive associations between pension income and better housing facilities. Clearly, socio-economic factors play a key role in explaining differences in health status.

Another group of researchers have suggested a socioeconomic status (SES) index based on various indicators such as class rankings, neighbourhood, education, occupation and so on. In Sweden, Ahnquist et al. (2012) examine the association and interactions between health status and social and economic capital. Using the 2009 Swedish National Survey of Public Health, the authors based their random sample on men and women 16 to 84 years old, and they estimate a model using multivariate logistic regression. They define economic capital as economic hardships which are measured by low household income, lack of cash reserves, and poverty.

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[20] Namibia and South Africa are the only African countries that pay a universal social pension to their elderly citizens automatically at the age of 60.

They define social capital as a combination of social participation, and something they call 'interpersonal and political trust'. Their main health measures were self-rated health, psychological distress, and muscoskeletal problems. Controlling for various socio-economic indicators such as age education, occupation, and so on, they found that economic and social capital was generally associated with poor health status. Although this is one of the few studies that combine social and economic measures as determinants of health in the literature, it is greatly weakened by the subjectivity of its social capital measures. Moreover, social capital measures such as class rankings do not fit the Nigerian context.

I note the sparseness of studies on African countries in this regard. Not many studies examine the income-health gradient on an individual and household level in Africa, with the exception of South Africa. It is not clear why South Africa has been the focus of many empirical studies in the past, besides the obvious explanation being the uniqueness of transfers to households and its welfare implications made it attractive to researchers such as Anne Case, Angus Deaton, and Lam and his colleagues for a time.

Using data from the National Health Interview Survey (NHIS) from 1986-2001, Case and Deaton (2005b) examined the links between occupation, earnings, self-reported health status (SRHS), and education in the US. The authors specified a modified version of Grossman's (1972) model, initially modelled by Muurinen (1982). An ordinal SRHS was used where individuals rank their state of health as excellent to poor on a scale of 1 to 5, one being excellent and 5 being poor. Household income was deflated to 1982 prices. Education was measured as the number of years of education completed by individuals. Using an ordered probit model, they estimate the effects of socio-economic factors on SRHS. SRHS is the dependent variable. They found that those in manual occupations have worse health than professional occupations, with the exception of the police and firemen; this is in line with theoretical predictions. Those in hard manual jobs would have higher rates of depreciation over the life-cycle. They go on to explain that self-selection bias is likely to be one reason why those in the police force did not follow the expected pattern given the health hazards attributable to the occupation. Through a decomposition analysis by sex, similarities in the patterns for men and women and smaller differences by sex were found. The findings were consistent with their earlier finding about the effects of occupation on health. The authors found support that income had protective effects on health.

Education did not produce consistent protective effects over the working life. With respect to age, they compared those in the labour force and those outside of it and assume that those in the labour force exit because of poor health. They demonstrated that the health of those that are economically inactive was worse than that in work until around age 50, at which point it

becomes better. They explain that the reason why differences become insignificant at that point is because normal healthy people exit the labour force into non-health related retirement. For those in manual occupations, health deteriorated, and there was no evidence of health repair as suggested by Grossman's model. The authors' finding highlights the role of occupation, income, and education as key determinants of SRHS, for both men and women.

Although Case and Deaton highlight the same weaknesses of SRHS as in other studies, the study can be criticised from another dimension. Their assumption about the elderly exiting the labour force only because of bad health is rather narrow. There are other reasons why elderly people may exit the work force besides having bad health, and as I found in the NGHPS, reasons such as caregiving and studying are common ones. Caregiving is a universal concept that applies to both developed and developing countries, and it is interesting that the authors primarily assume this position of considering health problems as the only issue for non-participation in the labour force, implying that exit is synonymous to retirement. This missing element raises questions about re-entry points into the labour force after the initial exit which has not been highlighted in their study. An elderly person may exit the labour force and re-enter at a later date or may choose to remain in the labour force regardless of bad health. Women in Africa are particularly known for continuing to work even when they are ill, due to their poor financial status. Russell's (1996) study reported that women in developing countries continue to work during periods of illness as they are unable to afford the opportunity costs of illness (Russell, 1996). Therefore, although their assumption may apply to South African elderly who have a universal pension at the age of 60 years, their assumptions about the exit paths of the labour supply at older ages would likely not apply to the Nigerian situation. As I have shown, elderly Nigerians remain in the labour force even beyond retirement age.

In the same year, the authors examine the health, income, and education nexus in poor households of rural areas of India and South Africa (Case and Deaton, 2005a). Between 2002 and 2003, they collected data using a stratified sample of 1,000 households in India and 300 samples in South Africa. Using regressions, they address the questions of whether wealthier households are healthier. The dependent variable is SRHS and the independent variable is income. In this study, they utilise anthropometric scores for health status, as well as SRHS based on ranking of health and blood pressure data. They found that education is a main correlate of health for women in both sites, but no literacy effects were found for men. In South Africa, consumption per capita was found to be significant in explaining SRHS effects—both consumption per capita (or income) and education have protective effects on health status.

Not many studies examine the reverse effects of health and income, that is, that poor health can cause economic vulnerability. Benzeval and Judge (2001) examined the impact of a bad health

status on poverty by using the British Household Panel Survey, 1991 – 1996/7. They followed a dynamic life-course approach by using longitudinal data on 10,000 British adults, which they estimated by using multi-variate logistic models. They found that longer term income is a better predictor for health than current income. In addition, chronic poverty has a negative impact on health more than being transiently poor does. Causal links between low income and poor health, after controlling for initial health status were also revealed.

Their methodology was based on the cross-sectional relationship between income and health, and they included a time dimension. They used four subjective health measures: measures of both physical and mental health problems, psychological wellbeing (GHQ), limiting illness, and subjective rankings of health. These measures were converted into binary form for the analysis. To measure poverty dynamics, they used net family income which they estimated by deflating at 1991 prices; the income data was then adjusted for household size using the McClement's scale. With the exception of their GHQ and health problem measures, they found strong evidence that income and SRHS are positively correlated (Benzeval et al., 2000), which is in line with a previous study by the two authors and other cross-sectional studies in the UK. Benzeval et al. (2001) also found that income was a better health status discriminator than occupation and education. But as Case (2004) warns, evidence of a strong relationship between income and health status does not necessarily mean that causal inferences can be made. As causality claims and their inherent challenges have little bearing on my empirical strategy, I do not discuss them here.

It is also worth mentioning that the studies mentioned here (with the exception of Case and Deaton 2005) do not address the problem of endogeneity which could occur from different sources. One issue is that of measurement error in the explanatory variables which I mentioned earlier. Self-reported health measures will need to be verified and checked for reliability, if valid inferences about the links between health status and economic vulnerability are to be made. Without other proxies and instruments for economic vulnerability, economic vulnerability (consumption) and health expenditure may be strongly correlated with each other, which may lead to another source of endogeneity. In Chapter 7, I discuss my approach to dealing with these potential sources of endogeneity.

2.4   Concluding Remarks: Literature Review

In this chapter, I have examined the various definitions and measures of economic vulnerability in the related literature. This review has revealed that from a conceptual perspective, there is no universal definition of economic vulnerability. In applied studies, theoretical definitions are less emphasised rather identifying a suitable indicator or measure is viewed as more important.

I have highlighted the shortcomings and advantages of adopting an assets framework to examine economic vulnerability among older groups. Assets may be useful in measuring economic vulnerability in affluent societies, in developing countries, availability of data and the presence of functional markets limit the usefulness of such frameworks in the study of urban elderly Nigerians. The most appropriate measure for economic vulnerability in a Nigerian context is likely to be consumption expenditure. The studies reviewed here strongly suggest that measure has the advantage of lowering the risk of measurement errors which plaques income data, and gives a more accurate picture of the economic resources available to households in developing country contexts. Reducing measurement errors will minimise the problem of endogeneity in empirical models.

I have also discussed the underlying socio-economic and socio-demographic factors that may help to explain why some older people may be more economically vulnerable than others which can act as determinants of economic vulnerability. These studies also reveal the importance of accounting for potential differences across groups of older people, for example, controlling for gender is generally viewed as good practice in household welfare studies.

Regarding health, from the literature, I observe that no study to date has applied the two theoretical approaches by Grossman (1972) and Andersen (1968) reviewed here, to understand the links between health expenditure and economic vulnerability for older people in Nigeria. There is also a general consensus that self-reported health status is a robust tool in predicting mortality, in spite of its subjective nature, rather than mortality data itself. Case and Deaton (2005) assert that self-reported health measures are more informative for those that are living as mortality rates are likely to not tell much if measures are based on people that have died (p.185).

I also observe other common themes from the literature:

1. Health dimensions can be linked to economic vulnerability, both theoretically and empirically. Grossman's (1972) model is the most common theoretical basis for most applied econometric work on health. Andersen's (1968) model is useful in modelling health expenditure models and identifying a host of control variables.

2. The issue of reliability of self-reported health measures plagues most studies, and its reliability can be examined statistically. It is generally agreed that the income-health relationship is complex. Cross-sectional data can be utilised to examine health status and income effects just as longitudinal data enables a deeper analysis over the life-cycle.

3. Most of the studies on health status of the elderly in Africa are primarily on South Africa. Based on the literature review, one is faced with two unanswered questions regarding the determinants of economic vulnerability among urban elderly Nigerians.

4.	An old-age starting point of 50 years and above is more fitting of the African context.

In addition, the review has revealed unanswered questions for the Nigerian context:

1.	Which determinants influence economic vulnerability amongst urban elderly Nigerians?
2.	Does economic vulnerability (through consumption allocation) directly influence health status and health spending?
3.	Does the use of secondary data allow an adequate exploration of the above two questions?

Question 1 and 2 are the primary questions which will offer a better understanding of the correlational relationships between the influencing factors and economic vulnerability, through a consumption allocation welfare measure. Question 3 is a secondary question. The next chapter situates the study within the Nigerian policy context.

3. Nigeria: Policy, Old Age, and Economic Vulnerability

In this chapter, I provide an overview of the political economy of ageing in Nigeria from post-independence to modern-day Nigeria, with a special emphasis on social welfare policy making for elderly Nigerians, as well as the impact of economic and political influences in allocating resources to support the welfare of elderly Nigerians. The political economy of ageing was first examined by Estes et al. (1979) in the study, 'The Aging Enterprise'. It attempts to explain how economic and political forces interact to determine resource allocation. It also holds that public policies and social structures can explain variations in the status of elderly people (Estes, 2001). For Estes and her colleagues, the welfare needs of older people do not occur in a vacuum.

Social, political, and economic factors play a key role in understanding the economic situation of elderly people. The objective of this chapter, therefore, is to situate this study of urban elderly people by examining the Nigerian policy environment. In 2003, Nigeria officially identified elderly people as a specific vulnerable group with the publication of a landmark report, '*The Elderly*, by the National Population Commission. This 2003 report presented the draft National Policy on Ageing (NPC, 2003). Since then, the policy has remained in draft form. In this chapter, I attempt to highlight the key obstacles impeding the implementation of the policy, as well as its future success. I shall begin by providing an exposition of the political economy of ageing in Nigeria.

3.1 The Political Economy of Ageing in Nigeria

Nigeria is an emerging and developing economy (Abiad et al., 2015). Emerging economies are frequently thought to have three things in common: a sizeable population, cheap labour markets, and a great amount of untapped potential (Looney, 2014). Nigeria's economic potential can be seen in its sustenance of economic growth expansion over the years, in spite of the banking crisis which precipitated radical banking reforms (Abiad et al., 2015). Over the last decade, the annual real GDP has been increasing by around 7% (African Development Bank, 2015). In a recent rebasing exercise, the GDP for the years 1999 to 2009 increased by over 40% after including the informal sector[21]. In monetary terms, this exercise increased its GDP from USD 270 billion to USD 375 billion, making Nigeria the 30th largest economy in the world (African Development Bank, 2012).

Nigeria's economic growth has been attributed to market reforms and policies, especially in the areas of privatisation, liberalisation, and bank reforms (Collier et al., 2008;Agunwamba et al., 2009). For example, the NEEDS (National Economic Empowerment and Development Strategy) and SEEDS (state-level strategies of the NEEDS) initiatives are two such programmes (2003-2007) which are policy tools of former President Olusegun Obasanjo's administration (1999-2007). The NEEDS initiative was aimed at three pillars – empowering people by eradicating poverty, engendering private enterprise, and restructuring and strengthening the way government works. NEEDs was modelled on the IMF's Poverty Reduction and Growth Agenda (Agunwamba et al., 2009). In 2007, when the late Umaru Musa Yaradua (1951-2010) came into power, he further accelerated the pro-market reforms of the Obasanjo administration to achieve economic prosperity in Nigeria.

Despite this overall economic prosperity in Nigeria, general improvements in living standards in the country have worsened over the years. International observers have noted the paradox of Nigeria's economic growth and high poverty rates (Sala-i-Martin, 2006;Sala-i-Martin and Subramanian, 2013;Collier et al., 2008). Household living standards differ across the regions of Nigeria as evidenced by Appleton et al. (2008) and Anyanwu (2014). Yet, poverty is often viewed as a national issue, which needs to be tackled using one-size-fits-all poverty alleviation

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[21] In line with the convention in the urban development studies, I take a dualistic approach to describe the economic activity in Nigeria's labour market. This dualistic model views the employment sector as comprising of a formal and informal sector Bromley, R. 2013. *The urban informal sector: critical perspectives on employment and housing policies*, Elsevier.. The formal sector is based on modern occupations with public and private agencies being the main employer; while the latter is predominantly based on self-employment activities.

programmes. In spite of all these programmes, recent poverty rates reveal a high and pervasive poverty rate of 62% in Nigeria (Anyanwu, 2014).

Nigeria is one country that benefits greatly from technical and funding support from various dominant international organisations such as the World Bank, IMF, and UN agencies. In many cases, the funding packages come with conditionalities that influence the policy environment in Nigeria. Of course, there are a host of complex factors which undermine the effectiveness of the poverty alleviation programmes in Nigeria. Some of the proffered reasons in the vast literature are poor macroeconomic planning, corruption, and identification problems, to name a few (see Oshewolo, 2010).

In terms of ageing issues, there are less significant international pressures on the welfare of older people, with the exception of the HAI and the UN's activities in the global ageing policy space. Much of the focus of development agendas in Nigeria has been on young people and women. In the later sections of this chapter, I discuss why this is the case in Nigeria, as well as the role that these dominant international institutions have had on driving a pro-market development agenda in the country.

In Chapter 2, I discussed the dominant theoretical concerns in the African ageing literature and its lack of influence in the ageing policy environment in much of SSA, and Nigeria is no exception. I will not repeat the criticisms here; rather it is important that I highlight some of the early and recent studies that may have unwittingly contributed to the lack of apathy on the part of the policy makers.

Early sociological studies on the family may have played a role in de-emphasising the need for a special policy for older people because these studies often base their analysis on Becker's altruism model, which ensured that children looked after their elderly when they grew old (Becker, 1981). In this sense, children were seen as a logical safety net (Caldwell, 1982;Fapohunda and Todaro, 1988;Dixon, 1987). Tracy (1991) asserts that this long-held belief that the family is primarily responsible for the care of elderly people is a key reason for the slow formulation of social welfare policies for economically vulnerable elderly people in Nigeria.

Similarly, and though the intention was to have the opposite effect, demographic studies may have also contributed to the lack of urgency needed to prompt policy action for older people in Nigeria. One such study is by Togonu-Bickersteth and Akinyemi (2014). The authors take a critical reflective stance; they identify some aspects of ageing that are being ignored by the Nigerian government—changing family structures, economic burden on children, geriatric needs, poverty, and lack of public intervention. The authors go on to present demographic

ageing population projections to underscore the urgency of the argument. In my view, the population ageing argument often invoked in the demography of ageing literature may have been successful in seizing the attention of policymakers in the global North. In Nigeria, it has been less successful and has undermined the strengths of the demography of ageing arguments in prompting policy action in Nigeria. I discuss my stance below.

Relative to some countries, there is no doubt that the amount of elderly Nigerians is significant in absolute terms. The projections of the amount of older people are equally remarkable. In 2006, two US Census Bureau statisticians surmised that the elderly population (those 50 years of age and above) in Nigeria will almost double, from 13.7 million in 2006, to 25.4 million by 2030 (Velkoff and Kowal, 2007).

However, in comparison to other groups in Nigeria, the elderly population is relatively small, at 4% of the total country's population of 174 million (UN, 2013a). From the NGHPS and the 1991 Census data, Table 3-1 reveals a relatively high age dependency ratio at 15%. This has almost doubled from 8% within two decades. Elderly people are growing demographically, but do these demographic changes signify a crisis? The fact that these projections are ignored by policymakers in Nigeria suggests that it is not viewed as a crisis.

Table 3-1 Elderly population and dependency ratio in Nigeria, 1991 and 2010

Old-age dependency ratios	1991 population census data	2010 (NGHPS dataset)
Percentage of elderly to whole population 60+	1 in 20 (5%)	1 in 14 (7.1%)
Dependent elderly ratio (per 100 working age population)	6	15
Sex ratio (for every 100 female elderly)	117	135

Note: For comparison purposes with the Census data, the age starting point has been restricted to 60 years old and above.
Source: NGHPS 2010 & NPC, 2003

Estes et al. (1979, p.20) point out that the stakes become higher when social problems are presented as a crisis. They note that 'crisis' is a social construction of reality. For there to be change, the issue needs to be perceived as a crisis, and as a result, visible action occurs. In other highly populated countries like India and China, old age has emerged as a significant social problem due to these countries' larger elderly populations. Both countries have the highest elderly population in the developing world (Kinsella et al., 2009). In the global North, the United States and the United Kingdom are experiencing population ageing on a large scale, which has significant implications for future ageing cohorts (Walker and Foster, 2014).

It is possible that policymakers have observed the weaknesses of the population ageing arguments being marshalled by some researchers of ageing in Nigeria to propel the issue as a crisis situation. Foster and Walker (2014) have warned that the tactic of following the lead of developed countries in ascribing population ageing as a crisis to prompt policy action is faulty—even more so when researchers implicitly assume that social expenditure on elderly people should automatically be a priority of policymakers because of demographic changes (p.547).

Nigeria's priority is with the youth. Given Nigeria's neo-liberal and pro-market regime, which accords more importance to economic productivity, it views its huge youthful population as untapped potential. It is therefore not surprising that youth employment is considered one of the most pressing policy concerns in Nigeria at the moment. At over 70%, youth unemployment is extremely high in Nigeria which negatively affects economic growth and development (Jibir et al., 2015).

What does this policy terrain mean for present and ageing cohorts in Nigeria? Foster and Walker (2014) advocate taking a retrospective view to decipher clues as to the future directions of policy for older people (p.547). The emphasis on the market economy and the lack of social welfare provisioning for vulnerable older people can be understood by examining the past. I therefore discuss a brief history of policy making in the next section.

3.1.1 Social Welfare Policy: History, Nature, and Patterns

Like many Sub-Saharan African countries, Nigeria has a pre-colonial and post-colonial past. When Nigeria gained its independence in 1960 from British rule, a series of state-building activities followed and these events continue to influence present-day policy making in Nigeria. Therefore, it is more useful to examine Nigeria's social welfare policies from the post-colonial phase.

Drawing on findings from a three-year project funded by the United Nation Research Institute for Social Development (UNRISD), Adésínà (2009) takes a retrospective view of social policy in sub-Saharan Africa, with a special emphasis on Nigeria. According to the author, the post-colonial phase in Nigeria can be dichotomised into two stages: the nationalist phase (1960-1980) and the neo-liberal phase (1980-2000). The nationalist phase was focused on improving production functions and ensuring human development, while the neo-liberal era focused on addressing market failures and stabilising the economy in SSA. He notes that the foundations of policy making in the nationalist phase in Nigeria were based on three moral standpoints: a

dedication to moral standards, a people-focused approach, and a pan-African ideology (Adésínà, 2009). African intellectuals strongly influenced social policy in this phase (Mkandawire, 2005).

Secondly, there was a more positive acceptance that public expenditure needed to be spent domestically to achieve the social objectives. Adésínà provides evidence to show that from 1960 to1980, social development funding was essentially financed domestically in 19 countries in SSA, including Nigeria. Using regressions of gross capital formation and gross domestic savings, they found a strong positive correlational relationship of 0.978 for the period 1960-1980 and 0.253 for 1980-2000. Excluding Nigeria from the analysis, the author found that the results remained consistent. This rise in donor monopoly in the funding of social development outcomes would usher in dominant neo-liberal ideas in many SSA countries (p.40), and as I noted earlier, Nigeria is a classic example of a beneficiary.

The role of dominant international institutions in the Nigerian policy landscape would be compounded by the introduction of economic reforms in the wake of the oil crisis in the mid-1980s. The 1980s ushered in significant hardship when oil revenues fell during the OPEC oil price crisis, coupled with macroeconomic instability, gross mismanagement of resources, and political upheavals. GDP per capita was at its lowest from 1980 to 1984; between 1980 and 1996, total poverty head count rose from 6.2% to 29.3% (UNDP, 2009). It is generally agreed that over the years, donor agencies, in particular, the World Bank, played a key role in shaping the policy environment in Nigeria since the 1980s. Ideas on policy were sourced from the global North, with a range of ideological policy prescriptions and, in some cases, conditional funding (Ekpenyong, 1994;Collier et al., 2008;Olowa, 2012;Aiyedogbon and Ohwofasa, 2012).

In this neo-liberal and pro-market phase, the efforts by government shifted from the nationalist agenda to stabilisation and a period of adjustment of the economy (Adésínà, 2009). Structural Adjustment programmes (SAP) were introduced in the 1980s. SAP was the brain-child of the World Bank and was viewed as the mechanism through which the economy can be brought back to a state of normalcy. SAP takes its foundations from the ideas of notable neo-classical economist, John Maynard Keynes, in his paper, *General Theory* (Keynes, 1936). However, it was the ideas in Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nation*, which was published in 1776, that gave foundations to neoliberalism (see Senker, 2015) for a more thorough discussion of the origins of neoliberalism).

According to Harvey (2005, p.2), neoliberalism is a political economic theory which holds that the wellbeing of individuals can be engendered through entrepreneurship and skills in a context of liberalised markets. In this political regime, the state plays a role but only to preserve such

enabling frameworks; it is characterised by minimal state interventions and a greater role for the market self-regulating based on prices. In reality, modern capitalism depends on greater levels of state intervention for market survival in many nations (Stiglitz, 2012). Over the years, the detrimental consequences of neo-liberalism on poor and marginalised people have been well-documented in the literature; for example, the impacts of the welfare of poorly paid workers to increase corporation profits has been documented (Senker, 2015).

The main reasons for structural adjustment of the economy in Nigeria were to reduce the dominance of the oil sector and to develop the service industry, particularly to influence economic growth and enable functioning markets. Adésínà (2009) asserts that this emphasis on macro-level policies has led to the neglect of social welfare spending in Nigeria. Citing World Bank and WHO figures, the author asserts that in 1980, spending in education was 6% of GDP (gross domestic product) in education; in 1995, this was 0.65%. Public health spending in 2002 was 1.2% of GDP and 5% of government expenditure in 2002. While public spending on health has improved over the years—6.6% of GDP and 25% of government expenditure— social security spending on health remains neglible (WHO, 2010).

Table 3-2 below shows that social security for health expenditure in Nigeria is negligible and has declined over a seven-year period, from 2.7% to 1.7%, while that of Ghana remained relatively steady at 87-88%. The lack of social welfare policies for elderly people in Nigeria emphasises an urgency to understand the economic welfare of elderly people. With recent studies on urban poverty reporting about 62% poverty rates in urban Nigeria (Anyanwu, 2012), and increasing economic pressures on urban residents in Nigeria, a study on the urban elderly becomes necessary.

Table 3-2 Social Security Expenditure as a percent of total government expenditure on health in Nigeria and Ghana (2000, 2007)

Country	2000	2007
	%	%
Nigeria	2.7	1.7
Ghana	87.3	88.3
Source: World Health Statistics, 2010 (UN)		

This low level of spending has an implication for elderly welfare—particularly among the economically vulnerable. Using various secondary data sources in Nigeria and a regression model, Ahamefule Amaghionyeodiwe (2009) finds that public health spending on health affects the health status of Nigerians, but the poor are particularly more sensitive to public health spending.

Critics of SAP attribute the austere conditionalities attached to the programme as the key underlying factor for why it failed to have the welfare-promoting effects for the poor. For the critics, structural adjustment failed to empower and improve quality of life of Nigerians—particularly among economically vulnerable older groups. According to Ekpenyong (1994), elderly Nigerians in particular suffered debilitating effects during the IMF's conditionalities on two levels: Firstly, income from children reduced with ever increasing inflation, and as a result of this, many elderly people had to augment their incomes through employment. Using data pooled from observations and surveys in both the pre- and post-SAP years, the author found that compared to the younger generations, the economic status of the elderly did not change significantly, and elderly people's access to economic and health resources deteriorated over the period; additionally, that there were significant regional and individual differences in the situations of elderly Nigerians in both survey periods. In urban areas, the researcher found that elderly people faced barriers to skilled employment and as a result became petty traders. According to the author, this participation in petty trading activities by unemployed elderly is thought to have fuelled the growth of the informal sector in Nigeria. This finding supports this study's stance that there is much to gain economically from elderly Nigerians' participation in the labour market.

I have noted the pre-occupation of policymakers in Nigeria with macroeconomic policies, which position social welfare policies as a secondary goal. In Western states, despite the weaknesses of the modernisation theory, the modernisation model helped highlight the effects of urbanisation and industrialisation, which led to the introduction of income maintenance policies or pensions for older people in many Western nations (Johnson et al., 2005b, p.499). Given that Nigeria is increasingly becoming urbanised (Satterthwaite, 2014;Ogun, 2010;Bocquier and Mukandila, 2013), why has rapid urbanisation not had the same effect in prompting policy action for urban elderly people in Nigeria?

In my view, pinning down the nature of social welfare policy within existing Western welfare regimes can better illuminate Nigeria's social welfare policy stance. Compared to the dominance of European welfare models in the literature, particularly the well-known models put forward by Esping-Andersen (2013)[22], Nigeria's social welfare policymaking for older people is rarely described in terms of a social welfare model, with the exception of two historic studies by Titmuss (1974) and Tracy (1991).

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[22] Rand et al. discuss how welfare models are more hybrid forms, although they are not as liberal as the Anglo-American forms which emphasise individualisation of protection from old-age risks (p.128-129). Phillipson, C. & Dannefer, D. 2010. *The SAGE handbook of social gerontology*, Sage.

Using case studies, Tracy (1991) discusses the applicability of social welfare programs in a Westernised context to meet the social development needs of elderly people in Nigeria. The author notes that Nigeria takes a minimal role in the welfare of elderly people because it places sole responsibility on the family. This low government intervention ideology in policymaking is referred to by Titmuss as the 'Residual Welfare Model', a system which largely develops social policy to meet the needs of individuals based on two main channels: private markets and the family (Titmuss, 1974, p.30). In other words, this model is characterised by minimal government interventions in addressing the needs of vulnerable groups.

The existence of pensions in Nigeria suggests that there are Western influences in its policy design for old age—although this covers only those in formal sector employment. Esping-Andersen's (1990) study of social security programmes in 18 OECD countries enabled the identification of three welfare state regimes: a liberal welfare regime, a conservative regime, and a social-democratic welfare regime (Esping-Andersen, 2013). Social policies in a liberal regime are characterised by mean-tested benefits, minimal universal transfers, and social insurance schemes. Some examples of a liberal regime are: the UK and Ireland. The conservative regime features social benefits that are assigned based on an individual's labour market participation; examples of conservative regimes are Germany and Italy. A social-democratic regime is focused on universal social protection schemes which provide benefits to all elderly citizens regardless of their backgrounds (Johnson et al. (2005b), citing Esping-Andersen ,1990).

The influences of these welfare models can be seen in policymaking in Sub-Saharan Africa, for example, South Africa and Namibia have functional universal pensions similar to the social-democratic regime (Niño-Zarazúa et al., 2012). Nigeria is clearly conservative in its approach to social welfare policymaking. Given Nigeria's penchant for conservatism, how does the National Policy on Ageing fare in light of this policy typology? Does this conservatism have any implications for the implementation and success of the draft National Policy on Ageing? In the next section, I discuss the ageing policy for elderly people in Nigeria and its emerging policy conundrums.

3.1.2 Policies for the Elderly in Nigeria

I have noted that the lack of social welfare policies for older people may be explained by Nigeria's conservative and residual welfare regime. In this section, I discuss the existing ageing policy in Nigeria. In preparation of the *State of the World's Older Persons* report in 2012, the United Nations Population Fund and HelpAge International compiled a detailed overview of available polices and legislation relating to older people in 32 countries, including Nigeria, and

the progress made since the Second World Assembly on Ageing in Madrid and the establishment of the Madrid Plan in 2002. Essentially, the plan articulated three core areas: older persons and development, advancing health and wellbeing into old age, and ensuring enabling and supportive environments.

In 1982, the same year that the First World Assembly on Ageing was being held, Nigeria hosted its first African conference on Ageing. From 1982 to the early 2000s, there was no clear strategy on policy formulation for elderly Nigerians. Following the Madrid Plan in 2002, Nigeria adopted the Framework of Ageing, along with all the other 52 countries of the African Union in 2003, and subsequently developed a National Policy on the Care and Wellbeing of the Elderly in Nigeria (also known as the National Policy on Ageing). Five aspects were specified in the policy document: housing, pensions, economic security, employment, and health services. The member states also called for legislation requiring adult children to care for their ageing parents, similar to that of China; a gendered dimension of ageing incorporated into policies and programmes for older people; and a higher recognition for the impact of HIV/AIDS and other epidemics on older people (NPC 2003).

Twelve years later, it is interesting to note the progress of Nigeria's commitment, at least in comparison to Nigeria's neighbour, Ghana. Ghana adopted its national policy on ageing in 2010, and although Nigeria drafted a National Policy on Ageing in 2003, it is yet to adopt the policy. As I noted earlier, prior to the Madrid Plan in 2002, elderly people in Nigeria were largely missing from Nigerian policymakers' radar.

Public institutionalisation for the care of 'family-less' elderly is largely uncommon in Nigeria. Dixon (1987) reports that the first few institutional care homes (also known as 'old people's homes') were established in Lagos, Ibadan, Benin, and now Delta and Edo states (formerly Bendel state) by the Salvation Army and Catholic missions, and in 1938 were handed over to the city councils to address the needs of the urban elderly without families. The minimum age for admission into these homes at the time was 50 years old. These homes, with the exception of Lagos have shut down over time. Ajomale (2007) states that there are ten homes in Nigeria. However, there is a lack of data to verify the numbers of institutional elderly homes that currently exist in Nigeria.

One area in which the government has been relatively active is the area of contributory pensions. There is no doubt that pensions are an important aspect of ageing policies in various countries. In Europe, pensions emerged in the 19th and 20th century, and they represent the largest source of public spending for older people (Phillipson and Dannefer, 2010). In Nigeria, the first pension system was established during the nationalist phase in 1961, and it was called

the National Provident Fund. It primarily was a private pension and was replaced by the National Social Insurance Trust Fund (NSITF) in 1994. In 1979, the public pensions system was created by the Pension Act No.1979. This system was a non-contributory pension scheme, and final payments upon retirement were dependent on length of service and final remunerations. It was primarily funded by the federal government [Gunu and Tsado (2012), citing Sule et al. (2011)].

The main issues with the public pensions system included lack of funding, which led to untimely payments of pensions to older people, and large pension deficits; this deficit was estimated to be about 2.6 trillion naira [23] (Idowu and Olanike, 2010;Gunu and Tsado, 2012). It would be interesting to examine the NGHPS for pension receipts by older people as a source of income, and I do this in Chapter 4. The Pensions Reform Act (PRA) 2004 was created to standardise the pension systems for both the public and private sectors. It also established the National Pension Commission to regulate and oversee pension issues in the country. The poor outcomes that were witnessed following the implementation of the reforms have been well-documented in the literature. For example, Casey and Dostal (2008) and Casey (2011) argue that Nigeria wrongly applied the Chilean pension reform—with its emphasis on privatisation—in crafting and implementing the Pension Reform Act (PRA) 2004. The authors assert that the system is unfitting for the Nigerian environment, hence why it has failed to meet the goals of improving pension coverage and influencing economic growth. I discuss the PRA 2004 and its problems in the later sections of the chapter, as it has an implication for the success of the National Policy on Ageing.

In the next section, I discuss the various aspects of the draft policy on ageing, with the aim of identifying impediments to its implementation and success in its current policy milieu.

3.1.3   The National Policy on Ageing

The National Policy on Ageing was drafted based on the Madrid Plan, which was agreed upon by over 150 countries in 2002. The National Policy on Ageing was prepared by an Inter-Ministerial Committee, which was set up by the Federal Ministry of Health. In the policy, the federal government highlights 'income security, healthcare, nutrition, housing, recreation, and social integration' as some of the 'essential needs' of elderly people. It accepts responsibility for the wellbeing of elderly Nigerians, including expressly committing to funding programmes for elderly people on a national scale (NPC, 2003). It recommends that all tiers of government devote no less than 3% percent of budget allocations to be earmarked specifically for the

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[23] Equivalent of over 13 billion U.S dollars at 2015 prices

support of elderly people. The 3% allocation demonstrates that Nigeria is prepared to increase GDP spending, at least on paper, to meet the aims articulated in the National Policy on Ageing.

The draft policy articulates its main objective as that of, enhancing 'the dignity, quality of life, and overall wellbeing of the elderly in Nigeria'. It plans to achieve the following for elderly Nigerians:

- Economic Security
- Health
- Social Participation and a Sense of Belonging
- Personal Welfare

If implemented, the National Policy on Ageing will be the first concise step of the Nigerian government in ensuring the welfare of its elderly citizens. More importantly, the National Policy on Ageing offers a policy stance more visible than the current de-centralised ad-hoc provisional arrangements which hinge on the whims of the leaders in respective States.

The strategies and overarching objectives subsumed above are lofty ideals. But there is a problem: the lack of clarity and ambiguities in the policy and Nigeria's history of policy failures may mean that the implementation may fail to deliver its benefits to elderly people. In the Introduction section, I briefly mentioned an underlying criticism of the MIPAA by two African gerontological experts. The authors also highlighted some ambiguities in MIPAA that are of relevance to Nigeria's National Policy on Ageing.

Citing Aboderin and Ferreira (2009), Aboderin (2010) articulates four ambiguities in the MIPAA: older rights, prioritising age groups, focus on present ageing cohorts, and time-frame of a vulnerability status. Of relevance here are three of the ambiguities, and I discuss each aspect in line with the Nigerian context.

Aboderin (2010) asks, 'In relation to the priorities of age groups - who has priority?' According to the author, the policy framework ignores resource constraints which face many SSA states. The author rightly argues that development agendas are likely to favour the young, and those dominant international concerns to highlight that the vulnerability of older people are more important in comparison to younger groups remains unconfirmed. The author maintains that age-related disparities are scanty and that the use of aggregate household's measures rather than individually based measures would be better. In my view, the latter part of the argument undermines the contextual argument that the author is trying to make. The issue of obtaining good individual data is first an expensive enterprise for many governments.

Secondly, it would be a wasted expenditure, as strong evidence in the vast intra-household literature on SSA countries has shown that separating household and individual consumption decisions is difficult in settings where income resources are pooled to an extent. My study also attempted such separation and found it to be complicated and inconclusive (see Section 4.1.3 in Chapter 4). While it may be easy to understand vulnerability among older individuals using individual data in developed countries, it is rather problematic to do so within an African context.

From a policy perspective, this issue of age prioritisation need not be an issue for policy purposes. Rand et al. (in Phillipson and Dannefer, 2010, p.133) strongly advocate against setting age groups as more important and deserving of scarce resources. Using evidence from other studies, the author concludes that targeting older people, women, and children equally reduces poverty.

Another issue is that of ageing cohorts and time frames: Aboderin argues that the policy framework focuses on present ageing cohorts and not those in the future who are likely to have better well-being from the MDG investments in the young. The author's stance is a bit myopic as she only identifies this ambiguity through an intergenerational support lens, where the young look after the old, and older people are unable to be economically independent. Examining it through a political economy of ageing perspective would reveal that the main policy instrument for achieving income security stated by the policy is through the national pension's scheme and employment opportunities for the old and young. These are policies that have both short-term and long-term ramifications, assuming that there are no policy failures. Therefore, I disagree with the author about MIPAA being likely to benefit only present ageing cohorts. In my view, there is a huge risk that it would only benefit future ageing cohorts because of Nigeria's track record of policy failures. I discuss some of these failures in later parts of this section.

Thirdly, Aboderin asks, does old-age vulnerability remain constant? The author rightly notes that MIPAA assumes that the vulnerability of present cohorts will also be that of future cohorts. This is, however, a matter of academic research rather than a policy one. My study attempts to address the issue of vulnerability in a specific time period. For long-term planning, and as I mentioned in Chapter 2, a dynamics of economic vulnerability study or a life-course vulnerability study will reveal more information about the patterns of old-age vulnerability over time.

Another important ambiguity observed by my study from Nigeria's National Policy on Ageing is that of achieving adequate income in old age, although it is unclear what the policy assumes is 'adequate'. Box 3-1 presents the government's three-pronged approach to achieving

economic security for elderly Nigerians. These statements are idealistic, but they ignore the current policy failures in the Nigerian environment which may bear upon its success.

Box 3-1 Policy approaches to achieving old-age income security in Nigeria

Item 1: establish a well-funded and effective national social security scheme and expand suitable employment options

Item 2: target economically vulnerable elderly people—defined as those trapped in poverty

Item 3: enhance financial capacity of younger persons to support older people

Source: National Policy on Ageing , Nigeria (NPC, 2003)

3.1.4   National Security Programme and its Reforms

As I mentioned previously, the structure and creation of the pension system in Nigeria has primarily been for private and public sector workers. The Nigerian pension system currently covers a very small fraction of the working population (Casey, 2011). This focus on the private and public sector work force means that it is unlikely to cover majority of elderly people if the remit is not expanded to include those that participate in the growing informal sector. I examine the extent of self-employment among urban older people in Chapter 4.

The Pension Reform Act 2004 was created to restructure the pensions system. Historically, social pensions have been a neglected area by the Nigerian government. In 2004, owing to large amounts of pressure from the public, the Pension Reform Act[24] was established and passed into law. The Act also established the National Pension Commission (PenCom) to ensure compliance with the rules and regulations prescribed in the Act. Besides the establishment of PenCom, the Act established the contributory pension scheme, which would then apply to all employers in the public sector and for those in the private sector with more than five employees. The main objectives of the new contributory pension scheme (CPS) were the following:

1.   Ensure that every person who worked in either the Public Service of the Federation, Federal Capital Territory, or Private Sector receives his retirement benefits as and when due:

2.   (b) Assist improvident individuals by ensuring that they save in order to cater for their livelihood during old age: and (c) establish a uniform set of rules, regulations, and standards for the administration and payments of retirement benefits for the Public Service of the Federation, Federal Capital Territory, and the Private Sector.

Under the CPS, an employee contributes a minimum of 7.5% of basic salary and allowances, and the employer shall contribute 7.5%. This amount is paid into a personal retirement saving account, operated by a Pension Fund Administrator (PFA). An employee may withdraw money from the account at the age of 50 or upon retirement (PenCom, 2008). In all indications, the pension reform has failed to work for elderly Nigerians (Casey, 2011), although some argue that the Contributory Pension Scheme is delivering benefits in the form of the growth of the capital markets, which leads to economic growth (Gunu and Tsado, 2012).

Others argue to the contrary and assert that it is unlikely that the reforms would deliver the welfare objectives, as they have applied a sophisticated model which demand an environment

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[24] Pension Reform Act 2004 (pencom.gov.ng)

suitable to such social protection systems (Casey, 2011;Casey and Dostal, 2008;Dostal, 2010). According to these authors, the features of the Chilean pension model which was applied shift the pension system from a defined benefit scheme to a defined contribution. With the former, the federal government allocated a part of the budget towards the payment of pensions to older people regardless of the state of the economy; with the latter, it uses personal accounts which are invested in the capital markets through Pension Fund Administrators. This dependence on the capital markets leaves the pension funds vulnerable to fluctuations in the stock markets—as was seen in the 2008 crash of the Nigerian stock market and the mid-2009 banking crisis in Nigeria (Dostal, 2010).

Casey (2011) argues that inflation is also a huge problem in Nigeria, and it has impacted on the performance of the reformed pension system because it was not taken into account. The implication of this is that for those that receive pensions, the pensions are too low to survive on. The Nigerian case is one example of where policy transfer has failed by applying a policy that is more suitable to an advanced country, such as Chile (p.2-4). The government has noted that pension funds need to be invested in higher premium infrastructure assets if good returns on pension savings are to be generated, but no concrete steps have been taken in this regard. As long as these issues remain, Casey strongly opines that elderly Nigerians will not be supported by the pension reforms.

Another issue is that of compliance due to a lack of understanding of the benefits of the scheme. This issue has been more visible in the integration of those that work in the informal sector into the scheme (Gunu and Tsado, 2012;Casey, 2011). In 2014, former President Goodluck Jonathan signed the Pension Reform Act 2014 (the Act) into Law on 1 July 2014, which repealed the PRA 2004. A key amendment to the PRA 2014 is that while the PRA 2004 requires private sector organisations with more than 5 employees to have a contributory pension scheme for employees, the PRA mandates only private sector organisations with 15 or more employees. It also includes a clause that self–employed persons and those with three or more employees must participate in the contributory pension scheme (Subsection 2 of PRA 2014, p. A33)[25]. In the past, the fluid structure of the informal sector has been a problematic issue in ensuring compliance, as well as the lack of awareness amongst sole proprietors and SMEs in Nigeria (Gunu and Tsado, 2012). Therefore, coverage is significantly low and elderly retirees face significant market and inflation risk (Idowu and Olanike, 2010;Casey, 2011). Based on these dilemmas, it is doubtful that current national security programme arrangements will deliver economic security objectives to future cohorts of elderly citizens.

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[25] Pension Reform (Pencom.gov.ng)

3.1.5 Expanding Suitable Employment for Elderly Nigerians

The policy does not elaborate on what 'suitable employment' means. The possibility of creating new jobs for elderly people is bleak, given the structure of the labour market in urban Nigeria. As I mentioned earlier, in recent years, the contribution of the informal sector has taken a greater role in the economy. The urban informal sector in Nigeria, in particular, has been lauded as a solution to the unemployment crisis in Nigeria (Bromley, 2013;Salami, 2013). There is a merit to this argument. According to Collier et al. (2008), the unemployment crisis in Nigeria has been caused by too many people chasing very few formal jobs. Given the high rates of unemployment in Nigeria, and the focus on youth unemployment, questions surrounding the creation of employment for the urban elderly remain unanswered.

Additionally, there is ample evidence in the literature to suggest that strenuous and manual occupations are not suitable for elderly people due to age-associated functional declines, specifically aerobic and musculoskeletal capacity, and the implications of manual occupations on health. I was unable to find any study that examines the impact of age on work capacity in Nigeria. Studies of other locations reveal the welfare implications of working in strenuous occupations at older ages. In the United States, Case and Deaton (2005b) found that over time, individuals in manual occupations had worse health than those in professional occupations. Kenny et al. (2008), in their review of the scientific literature in developed countries, report an average decrease in physical work capacity of 20% for people ages 40 to 60. In Nigeria, Appleton et al. (2008) found farm employment to be the most welfare-reducing of the occupations, followed by non-farm self-employment. Expanding suitable employment opportunities must take the aspect of health into consideration if it is to be welfare-improving.

3.1.6 Targeting Elderly People in Poverty

Given that the majority of Nigeria's poverty alleviation programmes rarely target elderly individuals, the policy's choice of a targeting approach is an interesting departure. There is ample evidence in the literature to suggest that a targeting approach for elderly people is a poor approach. In terms of the problems, Kakwani and Subbarao (2005a) note the logistic difficulties and the adverse incentive effects which make targeting the poor elderly very problematic. In the authors' study of individuals and households from 15 countries including Nigeria, for older people aged 60 years and above, the authors suggested that the old-age starting point—for the purpose of policy targeting—be increased to 75 years and above. Reassuringly, the study noted

the limitations of such a policy in a developing country context as majority of beneficiaries are likely to not survive to the age of 75.

The authors also presented contradictory evidence on Nigeria, that universal cash transfers would not reduce poverty rates by much compared to targeting the poor elderly. This finding is undermined by a limitation which Kakwani and Subbarao's study also highlights but does not address. The authors use calorific measurements to estimate average poverty lines in all the countries. However, the basis of these calorific measurements is not clear and the arbitrariness of the calorific measures may have understated or overstated the extent of poverty amongst elderly Nigerians.

With respect to universal cash transfers, the problems are typically based on the redistributive allocation of the transfer. Is all the money spent on the elderly at the household level or is this re-allocated to other members at the detriment of the elderly member? Using a 1993 nationally representative survey in South Africa, Case and Deaton (1996) found welfare-increasing effects in households with an elderly person that received the transfer compared to those that do not have the transfer— also see Case (2004). This issue of targeting is further discussed in line with the findings of my study in Chapter 8.

3.1.7   Social Services for the Elderly

The National Policy on Ageing is not specific about the programmes it would institute and at what levels they will be implemented. The policy aims to target and improve these five key areas: healthcare, housing, recreational facilities, transportation and mobility facilities, and personal welfare services. Theoretically, the investment in public infrastructure has welfare-improving effects. Keynes (1936) is credited as the first scholar to link infrastructure to economic growth in his seminal work, *The General Theory of Employment, Interest and Money*. According to the theory, in a context of market failures, high public investment is required to return the economy to a state of equilibrium and high levels of employment. Although this theory tends to focus on a macroeconomic level, it has been expanded to include microeconomic aspects, and it highlights the direct benefits to individuals and households (Anderson et al., 2006).

In Nigeria, Ogun (2010) reports that infrastructure reduced poverty in urban Nigeria. Using data from 1970-2005, and a structural vector auto-regressive model, the author finds that increasing investment in infrastructure in Nigerian cities would significantly reduce poverty. According to the author, infrastructure can be broadly defined as public spending in physical assets and social services. The inclusion of infrastructure development in the National Policy on Ageing to

improve the welfare of elderly people is therefore likely to influence welfare of elderly Nigerians, especially in urban areas. Sadly, the patterns of public spending on infrastructure in Nigeria suggest that it is unlikely that infrastructure for elderly Nigerians would happen. Nigeria remains plagued by appalling infrastructural facilities and some of the worst human development indicators in Sub-Saharan Africa. Per capita public spending on health in Nigeria is lower than the WHO's $34 threshold for the cost of essential interventions such as reproductive health and maternal child health (WHO 2010). In a technological age, only 6% of the population has access to the internet. This is mainly due to power failures and broadband capacity. Nigeria ranks 113 out of 144 countries in the use of Information and Computer Technology (World Economic Forum, 2012).

Housing

Housing policy failures are characteristic of the Nigerian polity. These failures have been well-documented in housing studies in Nigeria (Aribigbola (2008);Ndubueze (2009). Dominant international institutions have influenced Nigeria's housing policy terrain. Ndubueze argues that four main sources have been influential in propelling the enablement approach which focuses on crafting a policy framework which involves all stakeholders as well as housing. The UN and World Bank played a key role through releasing their various publications (see Ndubueze, 2009 for a thorough discussion).

In Nigeria, housing policies were designed to meet housing shortages and to improve affordability and equity of housing, especially in urban areas. Housing in Nigeria is primarily provided through two means: public and private housing. Public housing refers to housing provided by the government for its civil servants. Private housing is typically provided by private employers or private development firms. This varied aspect of tenure choice makes it problematic to untangle the housing needs of Nigerians or its impact on household welfare. Benjamin et al. (2010) also found that housing shortages can create large household sizes in urban China, which could result in economising behaviours among households. Ndubueze's (2009) unpublished doctoral thesis examined urban housing affordability in Nigeria using the Nigerian Living standards Survey 2003/04 and found that about 3 out of 5 urban households face housing affordability issues.

The first attempt of the government to play a bigger role in social welfare was through its 1st National Development Plan, 1975-1980, articulated by the government to intervene in the housing sector to increase the supply of housing in a dominant private sector-provided housing market (Ndubueze 2009, citing FGN, 1975). According to Ndubueze, this was precipitated by the housing shortages at the time (Ndubueze 2009, p.25). A decade later, high rates of

urbanisation worsened the housing supply and undermined the governments' social housing efforts; in 1991, the first National Housing Policy was established with the rhetoric that all Nigerians will have decent accommodations by the year 2000.

Following the failure of the policy to achieve its aims and in response to international concerns regarding the issue of housing shortages in developing countries following the Habitat II UN Conference on Human Settlements in June 1996, the government renewed the NHP (1991) by articulating a new National Housing policy in 2002, which was published in 2006. The policy had a set objective of providing housing accommodations for all Nigerians by the year 2000. The policy provided social housing units to help provide housing to the poor. In 2002, NHP 2002 was set up with the focus on engendering ownership, affordability, and secured tenure. Whereas civil servants had public housing provided by the government in past years, they were now paid housing allowances (50% to 75% of annual salary), and individuals now had to secure their own housing (Ndubueze 2009, citing Talba 2004)

The policy also aims to achieve housing affordability so that households do not spend more than 20% of household income on housing. Characteristic of the new policy was a greater emphasis on pro-market involvement. The introduction of private players raised greater concerns amongst scholars regarding the affordability of housing for Nigerians. Aribigbola (2008), a staunch critic of the NHP (2002), asserts that the policy has failed to meet the criteria of sustainable housing development because it lacks the principles of affordability, a sense of community, and equity. Using a questionnaire survey of 1266 households in Nigeria, the author reported that the majority of urban households are low-income earners, and they were not able to afford housing. The study also showed that the NHP has not made a difference in narrowing housing inequalities in Nigeria. With social housing being minimal in Nigeria, the economic burden on poor urban elderly households without employer-provided housing or an owned home is likely to be higher than that of other households. Ndubueze's (2009) study shares the same view. What does this all mean for housing provision ideals in the ageing policy framework? Ndubueze argues that there is a current housing policy dilemma characterised by the need to balance 'market liberalisation, government interventions, and social mechanisms' (p.59). Until this balance is achieved, decent accommodation for all Nigerians, including older people will remain elusive. In Chapter 5, I further examine the proportion of older Nigerians that own a home, the most common type of housing, as well as the importance of rental income using the NGHPS 2010 household survey. In Chapter 6, I examine its role as a determinant of economic vulnerability, through its influence on consumption allocation. For the purpose of our own study, while decent accommodation is important as the studies discussed above show, it is

important to understand if having a particular type of housing is correlated to economic vulnerability.

Health

Medical care for older people is also rarely prioritised, even though older people have unique health problems which differ significantly from the young population. Yet, health funding for elderly people in Nigeria is very limited. In 2000, projections put the number of geriatricians and acute care geriatric care beds in Nigeria at zero (Akanji et al., 2002,p.1290). The contrast between the policies for other vulnerable groups (such as women in productive age and children) and elderly people could not be greater. Health promoting programmes in Nigeria are focused heavily on maternal health and child health due to the influence of MDGs[26], further excluding elderly people from benefiting from health policy design.

As I discussed in Chapter 1, the health problems of elderly Nigerians and the impact of economic vulnerability on health outcomes must not be underestimated. Abdulraheem (2007) found low-levels of home visitations to older people by physicians in Nigeria, little or no domestic help for health assistance, and limited drug supply for the sick elderly. One study of medical admissions of elderly patients at a teaching hospital in Southwestern Nigeria report a higher demand for inpatient facilities and a higher incidence of premature discharge due to high financial costs among poor elderly Nigerians (Sanya et al., 2008).

With social security health expenditure for elderly being insignificant, at 1.7% of government expenditure (WHO, 2010), a cursory review of the Second National Development Plan in the 1970s reveals that the country planned for the provision of basic health services to Nigerians. This plan coincided with the oil boom in Nigeria (1970-1980), a period that signalled unprecedented growth in the Nigerian government's social services obligation and free preventative and curative services. Unfortunately, this development was short-lived in Nigeria owing to the structural problems that arose on a macroeconomic level from the oil crisis in Nigeria in the early 1980s, leading to shortages in medical supplies at public facilities and the increasing use of private facilities by Nigerians (Alubo, 2001). Although it is generally believed that user fees were introduced to deal with the funding problems at the behest of the World Bank and IMF as part of the Structural Adjustment Programme in many African countries (Xu et al., 2003b;Xu et al., 2007;Lagomarsino et al., 2012), the shift from free public health services to fee-charge public facilities heavily impacted household budgets in Nigeria.

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[26] The UN's MDG 4 and 5 was to improve child and maternal health globally by three-quarters as well as achieve universal access to reproductive health.

In 1989, attaining healthcare equity for all Nigerians became a feature in the Nigerian constitution. Specifically, the Nigerian government established the National Health Insurance Scheme (NHIS) under Act 35 of 1999 of the Nigerian Constitution, in response to the decreasing levels of government expenditure on health and an increasing concern that a significant proportion of health care was being financed by out-of-pocket payments. In 2006, Nigeria's health policy emerged amidst these increasing concerns that the majority of Nigerians lack access to quality healthcare. Therefore, the NHIS was extended to protect households from significantly high health expenditures and to engender private sector involvement in the health sector. The programmes initially offered coverage to only formal sector workers, and until recently has designed and implemented two more programs – informal sector programme and the vulnerable group program. Both programs aim to provide subsidies to self-employed individuals, pregnant women, children under five, orphans, unemployed, offenders, and disabled people respectively.

Protecting vulnerable groups from spending a significant proportion of household resources remains a high priority of Nigeria's health policy, as evidenced by the National Health Financing Policy (FMOH, 2006). The recent reforms to the health system in Nigeria, and the adoption of the Joint Learning Network's recommended approach for universal health coverage in 2012, demonstrate a strong political will to improve access to health services to all Nigerians. Yet, the Nigerian government allocates only 6.5% of all government expenditure, compared to the 42.4% average for LMICs, and has a per capita health spending of $131 compared the average of $181 for the LMIC group (PPP Int $) (WHO, 2010). Nigeria's NHIS currently covers only 3% of the population (approximately 5 million) in a population of 174 million people (Joint Learning Network, n.d). Elderly people aged 65 years and older remain excluded from enrolling in the national social health insurance scheme, and they are not protected from high health costs in Nigeria. Even so, voluntary contributions to the NHIS among those elderly people 50 years to 64 years of age remain low.

The NHIS covers the employee, a spouse and four children under 18 years old under the following programmes: Rural Community Social Health Insurance Programme, Children Under-Five Social Health Insurance Programme, Permanently Disabled Persons Social Health Insurance Programme, Prison Inmates Social Health Insurance Programme, Tertiary Institutions and Voluntary for those aged 18 years and above in a tertiary institution, Participants Social Health Insurance Programme, Armed Forces, Police and other Uniformed Services. All these NHIS schemes' benefit packages comprise of the following: prescription drugs that are on the NHIS prescribed list, consultations, specialist care, and inpatient care; the maximum inpatient care at a private or public health facility is 15 days. They also include preventive care, including

immunization, as it applies in the National Programme on Immunization; health education; family planning; and antenatal and post-natal care (up to four live births). Unfortunately, geriatric diseases are not covered under the scheme.

Geriatric diseases carry huge financial implications on household budgets, often leading to catastrophic financial consequences (Cui et al., 2011;Wang et al., 2015). Therefore, the exclusion of certain vulnerable groups (the poor, the elderly, and disabled) from a financial protection scheme is likely to impact household welfare, particularly among the poor and those working in the informal sector.

It is worth noting that the Nigerian government has recently extended the NHIS to incorporate those working in the informal sector called, the Urban Self-employed Social Health Insurance Programme. This scheme differs from the Formal Sector Social Health Insurance in how they are run; while the Urban Self-employed Social Health Insurance Programme is run by its members the Formal Sector Social Health Insurance program is administered by the government.[27]

Nevertheless, affordability and access issues continue to plague the Nigerian health system (Alubo, 2001). In the absence of a concerted effort to financially protect urban elderly people from incurring high health spending that borders on catastrophic, urban elderly households will continue to have to finance the health care of elderly members using out-of-pocket payments. These issues further underpin the importance of examining health spending and health status and its links to economic vulnerability in Chapter 7 of this thesis.

3.2   Concluding Observations

In summary, this chapter has provided a policy context for the study. The obstacles to the implementation and successes of the National Policy on Ageing have been highlighted in this chapter. The ambiguities and assumptions in the ageing policy framework were discussed. For instance, although the ageing policy is focused on improving welfare, it is not specific about what level of social wellbeing is to be guaranteed. While in some SSA countries, social policies are aimed at ensuring a minimum level of social wellbeing for its elderly citizens through its insurance schemes, old-age pensions, and social benefits; in Nigeria, the reverse is the case, and many of the social policies in Nigeria are tied to formal sector employment (p.38). Given Nigeria's track record of policy failures, it is important that the basis for implementing the ageing policy be based on a strong knowledge base and long-term planning, and that the assumptions and ambiguities are critically examined to confirm its accuracy.

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[27] http://www.nhis.gov.ng/

The discussion in this chapter has drawn on political economy ageing perspectives to highlight the resource allocation constraints in policy design from a Nigerian context. This study accepts that Nigeria is faced with scarce resources, and in times of economic constraints, poor or limited social welfare programming tends to be the norm (Estes et al., 1979). Nonetheless, there is scope for the government to take a more active role in prioritising the needs of its elderly inhabitants. The existence of a draft National Policy on Ageing is indicative of its commitment to elderly Nigerians, but without a shift in the government's conservative ideology of social welfare policymaking, it is unlikely that the policy will be implemented successfully.

Therefore, policy recommendations must go hand-in-hand with an understanding of the economic and political contexts as well as the economic welfare needs of the elderly. On a micro-level, understanding the key drivers of economic vulnerability is a good starting point in generating evidence on those elderly that are likely to be economically vulnerable and who may require urgent intervention, as well as understanding the link between economic vulnerability and health. This is the overarching concern of the thesis. First, it is important that I discuss the main secondary data source. I go on to discuss the use of secondary data, highlighting its strengths and weaknesses in allowing an exploration of the potential determinants and health-related consequences of economic vulnerability among urban elderly Nigerians.

4. The NGHPS 2010 Survey and Methods

In the Introduction section, I presented the two main research questions of the study in Section 1.4. These are:

1.   Do demographic and socio-economic factors influence economic vulnerability through consumption allocation?

2.   Does economic vulnerability (through consumption allocation) directly influence health status and health spending?

To address the research questions with the secondary data source, certain steps were necessary to ensure the NGHPS 2010 dataset was fit for purpose. The availability of the NGHPS has been a key advantage in this study; and it would have been impossible to achieve the research objectives without it. As Angus Deaton notes in his important book, *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy,* survey data analysis is a great tool to inform, shape, and guide policy processes in developing country contexts (Deaton, 1997). In comparison to experimental research, non-experimental research is typically less complex or detrimental to participants (Shadish et al., 2002). However, survey data is imperfect; and given the dominant use of the dataset, particular attention has been devoted to confirming the quality of the data as well as the reliability and validity of the findings. A more detailed explanation of the robustness tests used to provide confirmatory evidence of the statistical results has been comprehensively discussed in each respective chapter. This chapter primarily discusses the overarching methods and procedures.

In Chapter 2, I identified a secondary question that is very important to the study. This question is: **Does the use of secondary data allow an adequate exploration of the primary research questions of the study?** This study primarily uses secondary data and it is crucial to know whether the NGHPS survey data will enable the empirical investigation and the identification of possible determinants and consequences of economic vulnerability among urban elderly Nigerians to a satisfactory manner. In addition, any inference in an empirical study is affected by the quality of the data.

So far, I have presented the policy context and the rationale for an urban focus as well as the study's definition of urban elderly Nigerians. As I noted previously in Chapter 3, urban elderly Nigerians represent a small part of the huge Nigerian population. As the NPC's (2003) report rightly notes that, 'the term 'elderly' may conceal the diversity of a broad age group' (NPC, 2003, p.7).

The use of secondary data to examine disparities of older people in Nigeria is relatively uncommon. Thus, this study of urban elderly Nigerians will be incomplete without an examination of the disparities among elderly Nigerians on an individual level. The most up-to-date information on the demographic and socio-economic characteristics of elderly Nigerians is very dated and is based on the 1991 Census (see NPC, 2003). Additionally, understanding the differences in demographic and socio-economic characteristics is important because it influences welfare outcomes in old-age, and are a key feature in this study of economic vulnerability amongst urban elderly Nigerians.

This section discusses the NGHPS dataset, the main data source used in the study. I discuss the sampling design of the two rounds (post-planting and post-harvest) of the NGHPS, and its implications for this study's research design. I restrict this study's discussion to the data-generating process only as well as its strengths and weaknesses in relation to other available nationally representative surveys on Nigerian households. Any additional data-specific issues which I encountered during the empirical analysis have been discussed in the relevant chapters.

The NGHPS or GHS (General Household Survey-Panel) was collected by the National Bureau of Statistics in 2010-2011 as part of a longer term project to study the role of agriculture on household welfare over time. The need for data on households and the role of agriculture emerged out of concerns that although agriculture remains the largest employer of labour in Nigeria, not much is known about its impact beyond the available cross-sectional studies.

4.1.1 Cross-sectional Research Design and Scope of the NGHPS

According to Bryman (2012, p.59), a cross-sectional research design is characterised as having an interest with variation of variables, a concern with only a period of time, and a use of quantitative data to examine patterns of association.

Additionally, in the literature on older people, two main research designs are typically used: cross-sectional and longitudinal designs (Harris, 2007); the former is suited to a life-stage analysis, while the latter is more common with life-course studies on ageing. According to Lloyd-Sherlock (2010), the life-stage approach depicts ageing from a linear and rather simplistic perspective, while the life-course analysis approaches ageing from a dynamic point of view. The former depicts ageing as a distinct stage from previous stages in the life of the individual. It examines individuals at a specific point in their lives, for example, at 18 years old, the beginning of adulthood, or at 50 or 60, the beginning of old age. The life-course approach is more data-intensive and assumes that there are linkages and choices made in the past by individuals that impact the present conditions of that individual.

Harris (2007) maintains that cross-sectional studies are more frequently used in the study of ageing but can only identify age effects. Cohort effects are best examined through longitudinal studies. Age effects examine age differences, while cohort effects relate to the differences which cohorts have that are based on exposure to the same social influences. For example, older people born in 1940, for example, may have had a different socialisation experience than those born in 1970, although they may both be considered 'older people'. The author argues that the limitation of cross-sectional studies is that age and cohort effects are usually bundled up together, which can result in misinterpretation. Nevertheless, some development studies on older people have been able to circumvent this issue by using age categories to identify any existing age-cohort effects, an approach that is incorporated in my study.

Unlike cross-sectional life-stage models, life-course frameworks require longitudinal data because they view ageing as a *process* with periods of relative stability and moments of critical change (Harris, 2007;Johnson et al., 2005a;Victor, 2013). According to Johnson et al. (2005), a life-course perspective is very common in contemporary social gerontology. The approach typically combines sociology and psychology to understand the ageing process (p.14).

There are two limitations to this research design in studying ageing in Africa. With the exception of Ghana and South Africa[28], good quality longitudinal data is rare. The second issue is one that has been highlighted by Harris (2007). The author argues that longitudinal studies are weak in separating age effects from period effects. Period effects capture historical effects that can explain individual changes over time with advancing age, besides age and cohort effects (p. 15). In her example, testing ageing groups at intervals based on changes in sexual attitudes may reveal an increase in liberal attitudes towards sex, which can be due to a sexual revolution rather than an age effect. These age/cohort/period effects are valid arguments.

However, given that this study's main secondary source is cross-sectional and the interest is on older people, a life-stage model, typified by a cross-sectional research design, is essentially the best approach to address the research questions. The availability of a one-year panel dataset meant that a cross-sectional study would the best use of the data in addressing the research questions in the study. With the availability of more waves of data, one may be able to undertake causal studies of economic vulnerability (Dercon, 2001;Calvo and Dercon, 2005)].

For the first time in Nigeria, a longitudinal data of households would become a reality, enabling causal inferences with respect to the role of education on earnings, poverty dynamics, and so forth. The survey is an ambitious goal but one that has the support of key agencies in Nigeria.

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[28] The WHO-SAGE (Study of Global Ageing) dataset has engendered useful life-course studies on Ghana and South Africa in recent years.

The survey is a partnership of various agencies in Nigeria namely: The Federal Ministry of Agriculture and Rural Development (FMA & RD), the National Food Reserve Agency (NFRA), the Bill and Melinda Gates Foundation (BMGF), and the World Bank (WB). The NGHPS collects data on the 36 states of Nigeria as well as on the six geo-political zones of the countries—see Figure 4-1 and Table 4-1 respectively.

**Figure 4-1 Geo-political regions and states in Nigeria**
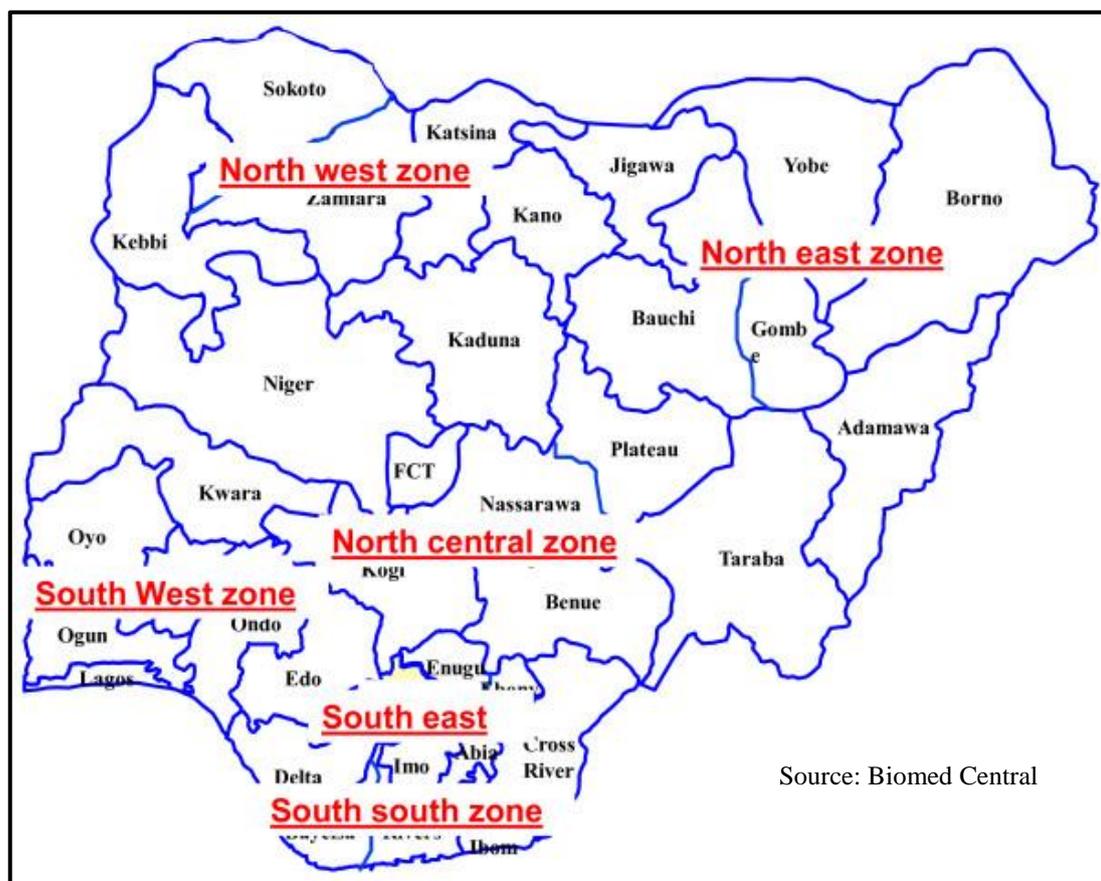
Table 4-1 Classification of States in Nigeria, by Region

Region	States
North – Central	Abuja (FCT), Benue, Kogi, Niger, Nassarawa, Kwara, Plateau
North East	Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe,
North West	Jigawa, Kebbi, Katsina, Kano, Kaduna, Sokoto, Zamfara
South South	Akwa Ibom, Rivers, Cross-River, Bayelsa, Delta, Edo
South – East	Enugu, Anambra, Ebonyi, Abia, Imo
South- West	Lagos, Ogun, Osun, Ondo, Ekiti, Oyo
Source: Biomed Central	

According to the Gates Foundation, Nigeria is a focal point for development due to its huge population of poor people. Its investment of more than USD $400 million[29] in funding to partner organizations in Nigeria over the past years underscores their stance to end extreme poverty, and improve infant and maternal health in the following SSA states: Nigeria, Ethiopia, Uganda, Tanzania, Malawi, Niger, and Mali.

One huge advantage for academics is that it offers opportunities for cross-country comparisons over the next few years. The GHS was set-up to collect data annually on 22,000 households. The NGHPS interviewed about 5000 households of Nigeria sampled from the full GHS (General Household Survey between 2010/2011. It collected data over two periods; post-planning visit (August-October 2010) and post-harvest (February to April 2011). The NGHPS will be undertaken every two years, and it represents the most up to date dataset for a representative panel of households in Nigeria. At the time of writing this thesis, the 2012/2013 data was released by the World Bank.

Noteworthy is that although the GHS is a cross-sectional dataset, it has rarely been used in many empirical studies. One reason could be because it is difficult to get a hold of for research purposes, and its reliability remains relatively unknown. The most commonly used household survey in empirical studies on Nigeria is the Nigerian Harmonised Living Standards Survey (NLSS 2004) collected in 2003/2004, perhaps due to its detailed multi-faceted nature. The NGHPS was based on a full revision of the GHS questionnaire to improve the data collection on agriculture sector, household behaviour, and sociodemographic characteristics. The revision also drew on the NLSS and an agricultural survey, entitled the National Agricultural Sample Survey (NASS). The former survey is known for its richness, and the latter for its focus on agricultural activity in the country. The strengths of both surveys have been combined to create the NGHPS 2010, which provide some reassurance as to its data collection protocols. In light of this, the sampling strategy used in the NLSS 2003/2004 and the NGHPS are similar. The strength of both the NLSS, and the newly created NGHPS, is in their representativeness at the national as well as the zonal. One limitation of the NGHPS is that it is not adequate for state level estimates (NBS, 2012), but this is a characteristic that does not affect its usefulness in addressing the study's research questions.

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[29]www.gatesfoundation.org

4.1.2   Other Household Surveys used in the related literature on Nigeria

4.1.2.1   The Demographic Health Survey (DHS) 2008

The DHS's main objective was to capture information on women on reproductive ages in Nigeria. Therefore, its emphasis on health dimensions or outcomes makes it a useful survey for health analysis. However, as it captures detailed health information and expenditure for the adult working population only – 15-49 years old for women, and 15-59 years for men (NPC, 2009), it limits its usefulness for an economic vulnerability study of elderly households. The survey interviewed 7,632 households. The survey collected information on fertility, mortality, sexual activity, family planning utilisation, infant health, awareness, and behaviour regarding sexually transmitted diseases, nutritional status of mother and children, malaria prevention and treatment, domestic violence, and female genital cutting (FGM).

It is therefore understandable that studies on health in Nigeria typically prefer the DHS. However, there is growing evidence that it is not representative of many Nigerian households compared to consumption expenditure-based household surveys such as the HLSS and the NGHPS which are more nationally representative of the whole population. And for studies that wish to link health to economic dimensions of welfare, it becomes impossible as the DHS data does not contain information important economic dimensions of welfare such as employment status. A limitation that Mberu (2007) highlighted in his study of household structure and living conditions in Nigeria which primarily utilised the DHS. In the following section, I discuss the robust sampling design of the NGHPS and its scope.

Sampling Design and Selection process

The NGHPS is a panel survey of households because it collects data between two periods, although it was all undertaken with a one-year period. The survey used a two-stage probability sampling method. Fowler Jr (2013, p.3) argues that probability sampling methods engender more confidence that the sample is not biased based on its computed sampling error.

In the first stage, the Primary Sampling Units (PSUs) were the enumeration areas (EA). EA were selected based on probability proportional to size in each state. Five hundred EAs were selected using this method. A major strength of this method is that it controls for size differentials among the 36 States to ensure representativeness. Ten households per EA were selected in the second stage using a random sample interval. These methods were also used in the previous rounds of the GHS and have been known to give reliable estimates.

Household attrition was also very low. In the first round, non-response rate was 0.3% leaving only 4,986 households with data out of the original sample of 5,000 households. In the second round, some households had moved, and the number of households reduced to 4,851 households for both urban and rural, comprising of 27,993 individuals in total. Households were not selected using the replacement method to preserve unbiasedness. As a rule of thumb in the literature, sampling without replacement is thought to be more efficient because it produces smaller sampling errors, compared to the replacement method (see Eurostat, 2008 for a discussion).

Scope

Three main questionnaires were adapted in the NGHPS: the household questionnaire, agricultural questionnaire, and community questionnaire were administered on all households, all agricultural households, and the community respectively. The household questionnaire is sufficient for this study's empirical study. In the first round, the post-planting visit collected information on the households, and in the second round, that is the post-harvest, the survey collected a different set of information on the households. This feature makes it easier to pool observations into one complete cross-sectional dataset. Pooling both rounds together, the NGHPS becomes a rich dataset with endless possibilities for different types of household welfare studies. In the next few years, the longitudinal nature of the NGHPS would enable elderly people and their households to be tracked over time and establish more causal studies. For now, I am only able to use the available data as a cross-sectional dataset to infer associations.

Information Collected and themes in the survey

Table 4-2 presents the information collected by the NGHPS based on individuals and household heads. In the second round, information on new members joining the household was also collected, as well as follow-up information on existing members.

Table 4-2 Household questionnaire content by themes and rounds, NGHPS 2010

Themes	Description	Respondent	Collected in Post-Planting?	Collected in Post-Harvest?
Roster	identification number, number of individuals living in the household; gender, year of birth, age, marital status, parental status, and place of birth of the household head	Household head	Yes	Yes
Education, Labour	Educational attainment and labour market participation during the last seven days	Individuals aged 5 years and above	Yes	Yes
Credit and Savings	formal loans and savings, insurance and remittances	Individuals aged 15 years and above	Yes	No
Household Assets	assets owned and values	Household head	Yes	Yes
Housing	Housing tenure choices, type of dwelling, access to social amenities	Household head	No	Yes
Non-farm enterprises	Enterprise owned	Owner or manager	Yes	Yes
Meals away from home	value of food consumed within the household in the last seven days	most knowledgeable person	Yes	Yes
Household Food Expenditure	Quantity and value of food consumed within the household	person responsible for purchases	Yes	Yes
Household Non-Food Expenditure	Non-food expenditure during the last week, last month, last six months and twelve months	person responsible for purchases	Yes	Yes

Themes	Description	Respondent	Collected in Post-Planting?	Collected in Post-Harvest?
Food security	Food security status of households during the last 7 days and 12 months. Data on intra-household food security dynamics.	Household head	Yes	Yes
Other income	other sources of household income during the year	Household head	Yes	Yes
Health	Health status, health utilisation, costs of health services. Data on disabilities, specifically Activities of Daily living and functioning; anthropometrics, and child immunisation.	All household members	No	Yes
Information and communication technology	Access to technology, and use of computers, internet	All individuals 10 years and above	No	Yes
Safety nets	Access to and utilisation of safety nets	Household head	No	Yes
Economic shocks and deaths	economic shocks and death of household members in the last 12 months	Household head	No	Yes

Source: NGHPS 'Basic Information Document', 2010/2011

Individual level data: The questionnaire contains information on household heads and individuals on age, sex, education level, residence, relationship to head of household, other household members, labour, and self-reported levels of health.

Household level data:

Each household roster contains information on the number of individuals living in the household; gender, year of birth, age, marital status, parental education, and place of birth of the household head. Economic themes such as safety nets, economic shocks, assets, different types of consumption expenditure, and other income were collected on a household level.

The diversity of urban elderly Nigerians is examined using data from the NGHPS. Where relevant, and mainly for a historical comparison, I draw on the Nigerian Living Standards

Survey (NLSS) 2004[30] and evidence in various government reports. Where relevant, individual-level information is extracted from both information sources on age, gender, labour force activity, earnings, rents received, and other income. Although, the NLSS is only 6 years older than the NGHPS 2010, it should uncover some useful differences of the state of elderly between those two time periods.

The NGHPS comprises of 5,000 households from which I draw this study's urban sample of 1620 urban households: 799 households are elderly households, made up of 1,063 individuals aged 50 years and above. While the NLSS 2004 comprises of 21,900 households – 4,646 are urban households: 2,061 are elderly households, made up of 2,692 individuals aged 50 years and above. The analysis in this chapter comprises of the 1,063 elderly individuals in Urban Nigeria.

The chapter uses simple descriptive analysis, bivariate analysis, and bivariate and multivariate regressions to address analyse the data. In applied statistical work in the social sciences, bivariate regressions and bivariate analysis such as simple statistical tests are often viewed as a first logical step for identifying possible causal or correlational relationships (Meier et al., 2011;Tarling, 2008). The strength of the bivariate regression makes it a useful tool to meet the objectives of this chapter. As Meier et al. (2011, p.390) further noted, once statistically significant relationships are obtained, one can go on to identify other relevant independent variables in a multivariate regression. The results produced from a bivariate regression are usually indicative of a relationship rather than a conclusive relationship. This study accepts this limitation and takes a cautious approach in ascribing a strong inference to the findings. There are also likely to be other potential limitations in using a household survey, like the NGHPS, to identify these disparities socioeconomically and demographically in the short run. This chapter discusses these limitations in the course of the analysis.

The Nigerian Household as defined in the NGHPS

In most developing county surveys including the NGHPS, a household is typically defined to mean a group of people who usually sleep in the same dwelling and share meals. In all the possible household structures listed above, there is an underlying assumption that a relationship based on blood or marriage is characteristic of a household. In the NGHPS, the majority of urban elderly households in this study's sample comprises of people related to the household head by blood or by marriage and are living within the household for more than six months. Some of these households are single-headed households but many are multi-person households.

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[30] The NLSS 2003/2004 has been thoroughly used as secondary data source in wellbeing and poverty studies on Nigeria [see Appleton et al. (2008), Ndubueze (2009)].

Box 4-1 below describes the UN's definition of households.

Box 4-1 Definition of households commonly used in household surveys

Single household: 'A one-person household, defined as an arrangement in which one person makes provision for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household'
Multi-person household: 'A multi-person household, defined as a group of two or more persons living together who make common provision for food or other essentials for living'. In this case, relation by blood or marriage is not necessary.
Source: United Nations, 2013

A household setup where households share from the same cooking pot and co-reside is more reflective of the Nigerian context. It is moreso accepting as most studies on economic welfare in Nigeria accept the survey definition and utilise the household terminology as the main unit of analysis, sometimes using the terms family and household interchangeably; an example is Mberu's (2007) study on household structure and poverty.

Household structure is an important component in understanding the economic situation of older people. Generally, urban households are typically known to have smaller household sizes due to the effect of modernisation, but size and composition of households tend to vary. This underlying determinant has created a cottage industry literature which examines the impact of household size and composition on economic welfare. The main idea being that there are economies of scale in consumption and production which can influence welfare outcomes. The vast literature in intrahousehold dynamics is far from arriving at a consensus, and these disagreements and data availability have led to some scholars ignoring intrahousehold dynamics for a simpler unitary household approach (Doss, 2006, 2013;Strauss et al., 2000 provide a comprehensive review of the literature). In the next section, I highlight one limitation of the NGHPS in allowing the exploration of intra-household resource allocations within urban elderly households which is likely to affect the welfare of urban elderly Nigerians.

4.1.3   Identifying Intrahousehold Consumption Allocations from the NGHPS

The NGHPS collected data on households collectively assuming a pooling of resources that closely aligns with a unitary model. At the beginning, this study did not accept the unitary model without the exploration of other models.

The premise of a unitary household ignores the potential power dynamics in intra-household resource allocation. The assumption of a unitary household is in line with the neo-classical economic theory of households, which assumes that African households pool resources as a

single optimising unit (Alderman et al., 1995). Gary Becker's theory of altruism follows a similar idea - that equitable distribution of resources is guaranteed on the basis of family altruism at the discretion of a head of household (Becker, 1981).

I tested for age discrimination in the allocation of resources between different age groups within elderly households in urban Nigeria using Deaton's (1989) outlay-equivalent ratio (OER) method. The advantage of this method is that it detects child age-group effects on adult expenditure (an indicator of adult welfare), from which I can then infer the presence of age bias within the households (Deaton, 1989). Deaton's work was motivated by a strong interest in identifying the intrahousehold inequality in consumption, which may affect the allocation of resources to certain members of the household, for example children.

In line with the OER method, I considered the identification of genuine adult goods for this study's various tests for discrimination, as well as the inherent difficulties in utilising an 'adult-goods' approach. I used econometric methods and statistical tests to control for selectivity bias in identifying adult goods. The usual tests of robustness were also estimated for consistency. However, the inherent difficulties in untangling elderly goods from adult goods data in the NGHPS made this approach a problematic one to apply. This limitation has influenced the choice of the unitary model in this study. Besides the intrahousehold approach, another approach is the use of equivalence scales to attempt to approximate a share of resources to members based on a given ratio. But this approach is not without its problems, one of which is that equivalence scales can yield faulty conclusions depending on the ratio that has been used. I discuss this issue later on in this chapter. I go on to examine the suitability of the NGHPS in providing the information required to address the two primary research questions of the study.

4.1.4   Why Economies of Scale Can Be Ignored

The literature on intrahousehold resource allocation (IRA) can crudely be divided into two: those that attempt to answer the research question of - how households distribute resources among their members, and those that infer intrahousehold inequality from the presence of discrimination/bias within households – the latter is known for utilising indirect methods of analysis. Studies that examine the unequal divisions that exist within certain age-sex groups and its implications for welfare abound in the literature, both theoretically and empirically. The proliferation of studies could be explained by the concern with the implications of intrahousehold inequality. For instance, some poverty studies argue that unequal allocations could result in the understatement of poverty measures for certain vulnerable groups within households (Case and Deaton, 2003;Gibson and Rozelle, 2004).

One fundamental difference between the indirect and direct types of studies is in the level of data required, for instance, the direct approach requires data on the outcomes of resource allocations such as calorie intake information, child health, fertility and survival (Thomas, 1990); while the indirect approach focuses more on utilising consumption expenditure models to investigate bias. The theoretical assumptions of both are of course different but a review of these differences goes beyond the scope of our study (see Strauss et al, 2000 for an excellent discussion of the theoretical and empirical issues involved in both types of study).

I examined whether it would be possible to demographically separate consumption expenditure urban elderly households. I tested for age discrimination in the allocation of resources between different age groups within elderly households in urban Nigeria using Deaton's (1989) outlay-equivalent ratio (OER) method. The advantage of this method is that it detects child age-group effects on adult expenditure (an indicator of adult welfare), from which I can then infer the presence of age bias within the households (Deaton, 1989).

Outlay Equivalent Method

The key theoretical foundations underpinning Deaton's outlay equivalent ratio method finds its roots in the well-established literature on equivalence scales and calculating costs of children indexes. Rothbarth (1943) is credited as the first scholar to suggest that expenditure on adult goods could be used as a reasonable adult welfare indicator in his work on measuring the costs of children. The economic predictions underpinning Rothbarth's model is based on two main ideas: 1) that the adult goods spending could be used as a reliable indicator of welfare of adults, and 2) the loss to welfare could be inferred from the cost of adding a child or children to the household.

The second prediction is similar to the approach first suggested by Engel in 1857 - which has become well-known as 'Engel's Law'. The difference between Engel (1857) and Rothbarth (1943)'s approaches to measuring child costs is that the former utilises the budget share of food calculated from total expenditure to measure the standard of living - which was then used to infer levels of welfare to households; the higher the measure, the better; while the latter advocates for the use of "adult goods" as a better indicator of a loss of welfare as well as to give a more reflective cost of children measure.

Regardless of this difference, the starting point for both Rothbarth's and Deaton's OER method is the Engel Curve. Rothbarth's approach can be illustrated with the function:

$$P_i q_i = f(x,a,z,\mu) \qquad (1)$$

Where, $P_i q_i$ = expenditure on a commodity, i; x = total household expenditure; a = demographic categories, z is a vector of control variables and μ = unobservable preferences.

According to Rothbarth, a in (1) can be broken down into two categories: adults (a_a) and children (a_c). The fundamental condition for Rothbarth's approach is that children are more likely to exert an income effect on demand in comparison to adults who will influence demand positively, given a set of preferences.

Deaton's work was motivated by a strong interest in identifying the intrahousehold inequality in consumption, which may affect individual welfare as a result of the allocation of resources to certain members of the household

In line with the OER method, I considered the identification of genuine adult goods for this study's various tests for discrimination, as well as the inherent difficulties in utilising an 'adult-goods' approach.

Deaton's OER method:

Steps:

- Estimate coefficients from the Working-Lesser specification[31] in (2)
- Combine the coefficients to calculate the equality ratios for all age groups in (3)
- Test the equality of ratios for significance

$$w_i = \frac{p_i\, q_i}{x} = b_{0i} + b_{1i}\ln(x|n) + \omega_i \ln n + \sum_{k=1}^{k-1} \gamma_{ik}\ (n_k|n) + d_i.z + u_i \qquad (2)$$

$$\pi_{ik} = \frac{(\omega_i - b_{1i}) + \gamma_{ir} - \sum_{k=1}^{k-1}\gamma_{ik}\ (n_k|n)}{(b_{1i} + w_i)} \qquad (3)$$

where, γ_{ir} is the effect of an additional person of type r on consumption i, r = 1,.., k, and γ_{ik} is defined to be zero. Following convention, I used sample means for the w_i *(adult good share of commodity i)* and $(n_k|n)$ ratios from the table above. Table 4-3 shows the results below.

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[31] See Working, H. 1943. Statistical laws of family expenditure. *Journal of the American Statistical Association,* 38**,** 43-56. Leser, C. E. V. 1963. Forms of Engel functions. *Econometrica: Journal of the Econometric Society***,** 694-703.

Table 4-3 Outlay Equivalent Ratios for our candidate adult goods, Nigeria 2010

Adult good	Child (0-6)	Child (7-14)	Younger Adults (15-49)	Older Adult (50 years and above)
Equality ratios				
All goods	-0.42	-0.31	-0.11	1.27
Adult Clothing	-0.32	-0.24	-0.36	-0.22
Religious donation	-0.06	0.11	-0.19	0.03
Adult shoes	-0.39	-0.12	-0.02	-1.01
Cigarettes	0.60	0.71	-0.31	-2.26
Matches	-0.64	-0.39	-0.21	-0.89
Alcohol	1.35	-0.19	0.09	-3.05
Newspaper	0.21	-3.09	-2.04	0.88
Standard Errors				
All goods	0.27	0.21	0.25	1.18
Adult Clothing	0.17	0.11	0.11	0.18
Religious donation	0.21	0.21	0.17	0.31
Adult shoes	0.44	0.29	0.30	0.47
Cigarettes	0.97	0.56	0.48	1.24
Matches	0.81	0.67	0.57	1.07
Alcohol	1.60	0.73	0.49	2.98
Newspaper	0.66	1.46	1.55	0.96

NGHPS 2010, Nigeria (urban elderly households)

The first six rows contain the estimates of the OERs. The interpretation of the ratios is as follows: In line with our theory, the OERs for all child groups should be negative, however, I found that OERs for children aged 7-14 is negative in five out of seven cases; the exception being cigarettes and religious donations. For the younger children (those aged 0 to 6 years), I estimated negative OERs for them in four out of seven cases with the exception of alcohol and cigarettes where positive OERs were estimated. This is a rather strange result that requires further investigation as it would be impossible to think that infants consume cigarettes and alcohol within urban Nigerian households. With regard to religious donations-a case could also be made for a positive coefficient for infants rather than the negative coefficient estimated. Nigerians are a deeply religious people and the birth of a child is often seen as a celebratory event with offerings made to churches and religious houses to mark the event. Based on this reason, caution is exercised in ascribing religious donation as a genuine adult good in the analysis.

Table 4-4 presents the Wald test for equality of OERs. The null hypothesis that goods are not consumed by adolescents is never rejected at the 5% level, but is rejected for infants. As Gibson and Rozelle (2004) note, it could be potentially as a result of low test power which results in the failure to reject.

Table 4-4 Wald Tests for equality of OERs across demographic groups

Age category	*Test*	p-value
Child (0-6)	*7.83*	0.005*
Child (7-14)	0.03	0.87
Younger Adult (15 -49)	0.14	0.71
Older Adult (50 years and above)	0.32	0.57

Ho: equality of ratios across adult goods, *p < 0.05, Source: NGHPS 2010 (urban elderly households)

Based on the Wald tests, I found very weak support for an adult goods approach in detecting age bias. From the NGHPS data, it is impossible to attempt to untangle the adult goods between working age adults and elderly people as this distinction was not made in the data collection process. It may be viewed as extreme to ignore economies of scale in consumption and production as I have done in this thesis, but it is by far the most appropriate method within a Nigerian context, where resources are often pooled in the household and where there is a lack of information on the decision-making process involved in sharing household resources at the household level.

4.1.5   Equivalence Scales: Strengths and Limitations

A large literature exists on ways to deal with problems associated with measuring well-being within households of various sizes and compositions (Buhmann et al., 1988;Chiappori, 2016;Deaton and Muellbauer, 1986;Shapiro and Wolff, 2001). One approach is to use equivalence scales.

Typically, equivalence scales are pre-defined ratios used to assign to each member of the household a per capita share of the income or wealth of the household. This works under the assumption of zero returns to scale of production and that that income or wealth is equally shared within the household. For example, Shapiro and Wolff, in their 2001 study of assets among the poor in the United States adopt Buhmann et al's formal expression of this idea:

$E = D/S^e$

Where, E = individual household wealth, D and household size, S, "e" captures the scale economies. e= 0 as in the explanation above where perfect economies of scale is assumed to exist. The other extreme is when e= 1, where no scale of economies exists. The implication of this is that for a two person household wealth of a two-person household must be twice that of a one-person household, in order for each person in the two-person household to be at the same level of income and wealth in the one-person household. The authors advocate for a "middle of

the road" approach and choose e = 0.5, because the scale is "a reasonable adjustment for household size" because it maintains the overall elasticity of the original measurement scales.

There is an unresolved debate about the appropriate equivalence scale to adopt and in what context. More importantly, there is strong evidence to suggest that the choice of equivalence scales can lead to wrongful conclusions about the welfare differences between households of different sizes and composition.

Using thirty different equivalence scales, Buhmann et al. (1988) demonstrate the complexity in which the choice of equivalence scales can affect poverty rates and inequality across different demographic groups. They conclude that because of these sensitivities, summary statements derived from equivalence scales must be cautiously considered. In other words, one's choice of any equivalence scale is likely to affect the proportion of those urban elderly households that are identified as economically vulnerable, if one was interested in understanding the welfare of urban elderly Nigerians as a separate demographic group.

Like many African societies, multi-generational households are a norm in Nigeria. In these settings, information on the economies of scale that certain demographic groups may have in producing and consuming goods and services is rarely available. Therefore, demographically separating consumption expenditure based on household consumption in the context of my study is likely to be a futile exercise.

4.1.6   Dependent and Explanatory Variables in the NGHPS

Certain variables are important in the investigation of the key determinants and consequences of economic vulnerability. These variables of interest have been identified as important based on the theoretical and empirical literature. In this thesis, consumption allocation is the main welfare measure through which one may understand why some older people may be more economically vulnerable than others. The use of consumption has been guided by the welfare literature in developing countries as well as from the data available in the NGHPS. From the review of studies in Chapter 2, household income (Meyer and Sullivan, 2003; 2011) and assets (Moser, 1998; Lloyd-Sherlock, 2006) are also alternative welfare measures from which one may examine economic vulnerability amongst older groups. In the next section, I examine two alternative measures discussed in Section 2.1.3, using the NGHPS.

4.2 Are Household Income and Durable Assets Suitable Proxies? Evidence from the NGHPS

The importance of income in household welfare studies is undisputed. As the economic vulnerability measure, it can help to identify if elderly households compared to non-elderly households differ in terms of spending power. It indicates a household's ability to control and access resources. I use non-elderly households as a reference group in this study. The NGHPS collects information on individuals and households based on sources including primary and secondary employment, gifts in-kind from jobs, rental income, and any other income. Employment earnings have been collected on an individual basis.

Table 4-5 presents the mean annual income for urban Nigerian households in 2010 in Nigerian currency— the Nigerian Naira. I found that in all income sources, elderly households have lower annual employment incomes compared to non-elderly households, suggesting that elderly households are less likely to be engaged in the formal sector. Non-elderly household heads had higher wage earnings from a second job, suggesting that there are likely to be age differentials which benefit younger people more than older people.

Table 4-5 Mean annual income per capita for urban households by income source in Naira currency, Nigeria 2010

	Elderly		Non-elderly	
Sources of income	Mean	SD	Mean	SD
Income per capita (primary job)	48806.04	164920.21	61317.26	247761.57
Income per capita (secondary job)	8290.44	59860.79	19612.88	266636.79
Gifts in kind (primary job)	47.30	791.04	95.75	1549.55
Gifts in-kind (secondary job)	298.57	3318.56	5041.71	131705.59
Rent received	1841.18	17235.74	1788.07	23344.53
Other income	3393.30	21657.75	2230.40	21432.82

Notes: Eight outliers of income greater than 90 million naira were excluded. All estimates are in per capita terms, and in Nigerian Naira. SD – Standard Deviation.
Source: NGHPS 2010.

The NGHPS suggests that elderly households have slightly higher incomes in relation to rent receipts and other income categories. This finding suggests that elderly households, perhaps as a result of the elderly person co-residing, may have had longer to accumulate income and may be in a better positions to purchase a home compared to non-elderly households. These findings are plausible, based on the life-cycle income hypothesis by Modigliani and Brumberg (1954),

which implies that older individuals are likely to have accumulated more wealth than younger people. I examine the role of the housing tenure choice as a basic determinant of economic vulnerability later in the chapter.

However, in terms of rental income earnings, elderly households have higher earnings compared to their non-elderly counterparts, suggesting that there may be an advantage unique to elderly households. In the next section, with guidance from the literature, I examine how housing tenure choices may affect economic vulnerability.

Rental income may affect the consumption of goods and services. In the next section, I examine the effects of rental income on economic vulnerability. In this case, I utilise consumption per capita as the dependent variable. As I have done in previous sections, the descriptive analysis begins with bivariate regressions analysis and correlations to understand the links between economic vulnerability and home ownership.

Table 4-6 shows that rental income has a weakly negative relationship with consumption per capita, suggesting that even if housing is used for income generation, it is a poor indicator of economic vulnerability among elderly households.

Table 4-6 Pearson correlation of consumption per capita and total household rental income per capita

	Consumption per capita	Household rental income per capita
Consumption per capita	1	-0.013
Household rental income per capita	-0.013	1
Source: NGHPS 2010 (urban elderly households sample)		

Table 4-7 shows that this weak relationship with consumption also applies to total household income per capita. In Chapter 2, I already highlighted that income measures are often prone to measurement bias. Therefore, it is not surprising that there is a weak relationship between the derived income measure and economic vulnerability. Consumption expenditure offers a stronger measure of household welfare and its command over economic resources to purchase goods and services.

Table 4-7 Pearson correlation of consumption per capita and total household income per capita

	Consumption per capita	Household income per capita
Consumption per capita	1	-0.014
Household income per capita	-0.014	1
Source: NGHPS 2010 (urban elderly households sample)		

Durable Assets in the NGHPS

In Chapter 2, I presented the strengths and limitations of using asset values as the measure of economic vulnerability. The usefulness of an asset approach can be viewed in how it helps to explore the prevalence of household assets and the identification of well-off elderly households (Moser, 1998;Lloyd-Sherlock, 2006). From the review in Chapter 2, one clear message is that it is more about the value of the asset owned rather than the quantity. For instance, a household may own two mats and be dirt poor whilst another household may own only one microwave. Within Nigeria, owning a microwave can be indicative of a well-off household given the high poverty rates in the country. For the purpose of the study, I examine the NGHPS for useful assets data. The NGHPS collected information on twenty five types of durable households' assets such as fridge, beds, microwave and so on. However, there was a high level of missing data for household assets. Response rate for assets data is low between 13%-24%. Beds, mats and radio were the most prevalent of household assets of the urban elderly heads, followed by furniture. Respondents were also asked about the value of these assets. There is no information on process of these assets or the basis upon which asset values were determined. Without control on the data collection process, it is difficult to verify the asset values. This weakness of the NGHPS limits that use of asset values as an alternative measure of economic vulnerability.

In the next few sections, using the NGHPS data and NLSS 2003/2004, I examine the demographic and socio-economic characteristics of urban elderly Nigerians to further highlight the strengths of the NGHPS.

4.3   Profiling Urban Elderly Nigerians

In this section, I present a profile of urban elderly Nigerians from the NGHPS 2010 and NLSS 2003/2004. The demographic and socio-economic characteristics discussed here are based on those that have emerged from the review in Chapter 2, they include: age, education, occupation, health status, and health spending. In light of our secondary research question in this chapter, does the NGHPS allow the exploration of the variables deemed to be important from the literature as determinants for this study? This section will provide more information on any gaps in the NGHPS. Furthermore, as majority of the empirical analysis in this thesis will be undertaken at the household level, this section explores urban elderly Nigerians as individuals rather than households to examine the strengths of the NGHPS. Relevant cross-disciplinary perspectives are used to expand the discussion.

I also examine the NGHPS to determine how representative ageing categorisations are in the Nigerian context, and to determine which is most suitable, using descriptive statistics. In Section 2.21, I presented the debate that highlights that there are two types of old-age classification, (1) the retirement age which is based on societal definitions to signal an exit from productivity and reproductive capabilities. Although retirement age can be a trigger event for financial security or insecurity in old age (Zaidi, 2014), and (2) the lower old-age starting advocated for by the WHO, in line with the African context.

In the sociology of retirement literature, retirement is often considered to be the main instrument through which society encourages elderly people to withdraw from economic roles (Wang, 2012;Phillipson, 1993;Harris, 2007). This notion of retirement has its theoretical foundation in the disengagement theory which was first articulated by Cumming and Henry (1961). The theory emphasises the withdrawal of older people from society and the preparation of the elderly person for eventual death. The evidence in the studies, discussed in Chapter 2, show that contrary to the disengagement theory, elderly people in some Sub-Saharan African countries, including Nigeria and South Africa, continue to work beyond the westernised notion of retirement ages (Maharaj, 2012;NPC, 2003;UN, 2013a). This highlights the importance of work status of urban elderly Nigerians and the links to education and occupation, in particular. I examine these three aspects using the NGHPS.

One notable criticism at the time of the disengagement theory, that is relevant to the Nigerian context was put forward by Hochschild (1975). According to the author, some elderly people are financially constrained and cannot afford to dis-engage from their previous jobs without other sources of income. The author also emphasised that there are perceived social benefits in working, held by older people for working, and which the disengagement theory does not consider. In modern Western societies, these deficiencies have been acknowledged by social gerontologists— for example: (Marshall and Bengtson, 2011;Foster and Walker, 2014). In light of this, what then happens if some elderly people are dis-engaged and others are not from the work force for whatever reason? In all indications, there are economic welfare implications because some may be able to generate a source of income while others may not. This could potentially explain the welfare allocation differences among older people in Nigeria, especially given poor pensions systems (Chapter 3), that may then work to contribute to their economic vulnerability (Walker and Foster, 2014;Zaidi, 2014;Niño-Zarazúa et al., 2010;Kakwani and Subbarao, 2005b). Using the NGHPS, I examine earning differences among older people using descriptive statistics, the official retirement ages of 60 years to bring it line with those in the public sector. As most people continue to work into advanced ages, using the lower retirement age in relevant sectors of this chapter is more prudent in preventing bias upwards or

downwards. I begin with revisiting the old-age starting point, using the NGHPS as a source of evidence to justify the use of an old-age starting point of 50 years and above.

4.3.1 Old-age starting points re-visited

In Chapter 3, I earlier noted that Nigeria's employment sector is characterised by the formal and informal sector. The formal sector comprises of the public sector (government worker or civil servants) and the private sector. The retirement age for either sector differs slightly. The retirement age for the public sector in Nigeria is 65 years or after 35 years in service, and 50 or 60 years old for the private sector. On the other hand, the informal sector comprises of self-employment and less structured work, which is not governed by mandatory retirement ages. In this informal sector context, transitioning into old age is less detectable as older people may simply carry on working until the end of their lives. This is one perhaps one immediate deficiency in using a westernised notion of retirement age in a study of older Nigerians.

Age is a useful variable for understanding welfare differences, because it interacts with other variables such as educational attainment. The age variable can also reveal the sample proportion of older people in the NGHPS, with a historical comparison provided by the NLSS 2004 survey described in Section 4.1.1. **Are elderly Nigerians as at the survey date more predominant in the household survey in 2010 compared to 2004?** In line with conventional, older people into different age categories to examine any differences. Dividing older people into age categories also has the advantage to revealing the diversity of older Nigerians (NPC, 2003, p.7;NMEC, 2008).

Proportion and Mean Age of older people in the 2004 and 2010 surveys

In 1991, the ratio of elderly people aged 60 years and above was 1 in 20 based on census data (NPC, 2003). In 2010, the NGHPS suggests that the elderly ratio of elderly people aged 60 years and above is 1 in 14[32]. Although, this finding suggests that elderly Nigerians may be living longer compared to 1991, the short term nature of both datasets restrict a verification of the pattern over time. Nevertheless, national indicators may provide a useful alternative in the absence of data. Average life expectancy in Nigeria was 51 years in 2010 while in 1995, this was 42 years old (World Bank, 2015) indicating that there has been a slight improvement in the life span of elderly Nigerians[33]. One explanation could be as a result of improvement in health technologies (Cowgill, 1974). Okeke (2015) testifies that the older population in Nigeria increased remarkable as a result of investments in public health infrastructure in the 60s and

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[32] To aid comparison, I have excluded those aged 50 – 59 years old from the estimation.
[33] Life-expectancy estimates are indicative of the average ages that elderly Nigerians can expect to live

70s, although any progress has now been reversed due to the reverse fortunes in the country during the 80s and 90s which led to widespread poverty. I have discussed the impact of the cuts in social spending and its impact on urban infrastructure in Chapter 3. All of these factors are likely to interact with the living conditions of elderly Nigerians which lead to relatively life expectancies in comparison with older people in developed countries. The resulting implication is that older people over the age of 65years and above may not prominently feature in research, if the old-age starting point is not contextualised accordingly.

Table 4-8 reveals the percentage distribution of urban elderly Nigerians by age categories in 2010 and 2004. Urban elderly Nigerians lived slightly longer by three years although the difference on average is rather modest and was statistically insignificant. The highest age for elderly person is 102 years, and belonged to an elderly man. Mean age has remained consistent in both time periods, suggesting that population distribution for older Nigerians has not remarkably changed in the 6 year period. Mean age of elderly people typically falls around the 62 (SD±10) mark.

Table 4-8 Mean, SD, and maximum age of urban elderly Nigerians, by gender; 2004 and 2010

Age and Survey Year	Mean (SD)	Max	N
Age in 2004	61.17(9.89)	99	2692
Age in 2010	61.48 (10.12)	102	1063
Age in 2004 (Female)	60.95 (9.93)	99	1214
Age in 2010 (Female)	61.48 (10.13)	95	502
Age in 2004 (Male)	61.34 (9.86)	99	1478
Age in 2010 (Male)	61.48 (10.12)	102	561

Note: The sample comprises of elderly people aged 50 years and above

Source: NGHPS 2010 and NLSS 2003/2004 (urban samples). Standard deviation in parentheses.

Table 4-9 Proportion of urban elderly Nigerians, by age categories and gender in 2004 and 2010

Year	2004		2010	
Age Categories	Female	Male	Female	Male
50-59	50.00	47.90	49.20	46.17
60-69	28.09	30.85	27.89	31.19
70-79	14.99	14.14	13.55	16.40
80-89	5.35	5.41	8.17	4.99
90+	1.57	1.69	1.20	1.25
Total	100.00	100.00	100.00	100.00
N	1214	1478	502	561

Note: All figures are in percentages
Source: NGHPS 2010 (N=1063) and NLSS 2003/2004 (N=2692)

Table 4-9 shows that women begin to disappear more rapidly from the data compared to men between ages 80-89 years old. On explanation for this gender difference is that women may have worse health than men, which pre-disposes women to a higher mortality risk. The question regarding whether more women have worse health than men is one that remains unanswered for now but I shall return to in Section 4.4. While this study is not focused on a gendered study of health status, studies reviewed in Section 2.3 suggest that, it is important to control for gender as an important variable that can influence health choices, which may affect health status.

Another point from the table above shows that if one is to ignore older people aged 50 years and above, valuable information on 50% of the older population distribution will be lost. Besides the contextual argument for using an old-age starting point of 50 years, this has an implication for the inferences that this study makes. If older people can retire from the age of 50 years in the private sector, it therefore makes sense to reduce the old-age starting point to 50 years and above for studies on older Nigerians.

According to Harris (2007), as individuals move through age categories over the life-course, one exchanges a status for the other. To some extent, old age can be characterised by a shift in one's status. Besides age, there are likely to be other socio-economic and health factors which may help to explain potential intra-aged economic welfare disparities (or the lack of it). In the next section, I examine the strength of the NGHPS in identifying these socio-economic characteristics and differences.

To aid this investigation on an individual level, I address the following exploratory research questions:

- Occupational differences: What elderly people do as a profession, which sector employs the most elderly? Are elderly people are economically active? If so, which occupation is favourable to older people?
- Educational attainment differences: Are there differences in educational attainment? Does education relate to old-age employment?
- Health Status and spending differences: Are there differences in health status and health spending at the individual level?

4.3.2 Occupational differences

While it is useful to present summary information on these three dimensions. It is more meaningful to examine these socio-economic disparities in line with labour force participation in old-age due to its importance to economic aspects of ageing (Schulz, 2010).

Thus, this section is concerned with presenting the occupational and educational differences among the elderly through the lens of work status. It further examines the work status of urban elderly Nigerians with two objectives: Firstly, to investigate whether elderly people continue to participate in the formal sector even after attaining retirement age; and Secondly, to examine whether work status differs based on demographic and socio-economic characteristics (Calasanti, 2010b, a;Antecol, 2000), or both (Lam et al., 2006).

Occupational distribution of urban elderly Nigerians

Table 4-10 shows that agriculture is the most common employer of post-retirement elderly labour in Nigeria - 68% of urban elderly people were engaged in agricultural activities. This finding confirms to the Nigerian literature (Agunwamba et al., 2009;Collier et al., 2008). Urban agriculture in Nigeria is beginning to gain momentum as a tool for building employment income (Salau and Attah, 2012;Redwood, 2012). As Harris (2007) noted, agrarian societies often offer the highest opportunity for farm work among elderly people. The author ascribes that the high level of participation is because society tends to assign less stressful roles to older people such as helping on a garden and on a farm. This is clearly viewed from a western ideology rather than the African situation, as available evidence suggests that elderly people in Africa participate in small-holder Agriculture to eke out of a living rather than for leisure (Kinsella and Phillips, 2005;Oppong, 2006;NPC, 2003); and more than half of Nigeria's poor are engaged in Agriculture (Iwuchukwu and Igbokwe, 2012).

From the NGHPS, retailing or 'buying and selling' is the second most common employer of elderly labour. Conversely, in 2004, professional services were the most prevalent employer of urban elderly people followed by agriculture, and only 4.72% were engaged in retailing. In 2010, less than 1% of urban elderly people were employed in the professional services sector. One possible explanation for this shift in labour supply from the professional sector to the agriculture sector has been documented by Collier et al. (2008). The authors assert the high unemployment rate in Nigeria has been caused by an imbalance of labour demand and supply in the formal sector. In other words, that there are too many people chasing very few jobs which has been exacerbated by rural-urban drift (also see Giddens, 2009; Potts, 2013).

Moreso, due to this deficit in jobs market and pension reforms, there is likely to be a higher vigilance and enforcement of retirement over the years in the formal sector in Nigeria, leaving informal sector activities as the most feasible option for elderly to earn a wage after retirement age(PRA, 2014). In light of these labour market pressures, some elderly Nigerians may fare better than others due to certain educational advantages? I go on to examine both these educational aspects.

Table 4-10 Primary occupation of urban elderly Nigerians, Nigeria 2010

Occupation	2004 N=756	2010 N=261
Agriculture	26.59	68.20
Manufacturing	3.44	4.21
Professional services	38.36	0.38
Construction	3.57	1.92
Transportation	2.12	1.15
Retailing	4.63	13.79
Personal services	4.50	3.07
Education	3.31	2.68
Health	-	1.15
Public Administration	4.89	3.45
Not easily classified (NEC)	8.60	-
Total	100.00	100.00

Note: All figures are in percentages. This distribution applies to older people aged 61 years and above (assuming the chosen retirement age 60 years).
Source: NGHPS 2010 and NLSS 2003/2004

4.3.3   Educational differences

There is no doubt that education in Nigeria is an important indicator of socio-economic status and health status among elderly Nigerians. One study in Nigeria on retired elderly academics found that re-engaging them in the workforce improved their quality of life (Ejechi, 2012). Unfortunately, not all elderly people would be able to accord such status to teach at Nigerian Universities without a solid educational background. Furthermore, educated individuals and households are more likely to have healthier lifestyles and respond to health messages (Grossman, 2000).

Education attainment is an important feature in the Nigerian policy environment, and in Chapter 4, I discussed briefly the formal educational system and its challenges in Nigeria. In SSA, one emerging issue has been the differences in literacy rates between the young and old. In 2013, adult literacy rates in SSA was 59%; and for youths, it was 70% (UNESCO, 2013). Literacy rates are often defined as the ability to read and write (ibid.) In Nigeria, the completion of primary school education is indicative of an individual's level of literacy (NPC, 2003). According to the NMEC (2008), elderly Nigerians aged 50 years and above have the highest illiteracy rates in the country. In 2008, elderly women had literacy rates of 14.6%; and for male elderly, it was 40.9%. Regrettably, this study found no recent NMEC reports that provide updated figures for elderly Nigerians. The NGHPS data offers a unique opportunity to examine literacy rate among the urban elderly.

The human capital theory surmises that education is a key determinant of household income and that there is a positive relationship between educational acquisition and wage earnings (Becker, 1964). In the empirical literature, the importance of education has often enjoyed a consensus in developing countries. Elsewhere in Latin America, it has been found to be an indicator of social status (De Vos, 2005). Empirical evidence in studies in Nigeria has revealed that education can improve one's life chances and reduce economic vulnerability. Using Consumption Expenditure Surveys in Nigeria over four periods (1980, 1985, 1992 and 1996), Okojie (2002) found that education reduced the likelihood of household poverty in Nigeria. Elsewhere in Africa, Mukherjee and Benson (2003) using data from the 1997–98 Malawi Integrated Household Survey found that educational attainment would be poverty-reducing in Malawi.

From the NGHPS 2010, I visually present the data on educational attainment for urban elderly Nigerians in Figure 4-2 and Figure 4-3. As one moves up in the educational categories, the proportion of those with higher degrees are lower. 36% of urban elderly Nigerians are illiterate, putting literacy rate for urban elderly Nigerians at 64%. It is worth noting that the National Literacy Survey conducted in 2010, by the National Bureau of Statistics estimated the urban

literacy rate as 75% and for rural areas, 49%. Given the NMEC's (2008) very low figures above, it is possible that by including rural elderly Nigerians, its figures may have been skewed much more downwards than is the case for urban elderly Nigerians. I examine the educational distribution for age and gender differences.

Figure 4-2 Educational attainment among urban elderly Nigerians aged 50 years and above, 2010

Source: NGHPS 2010
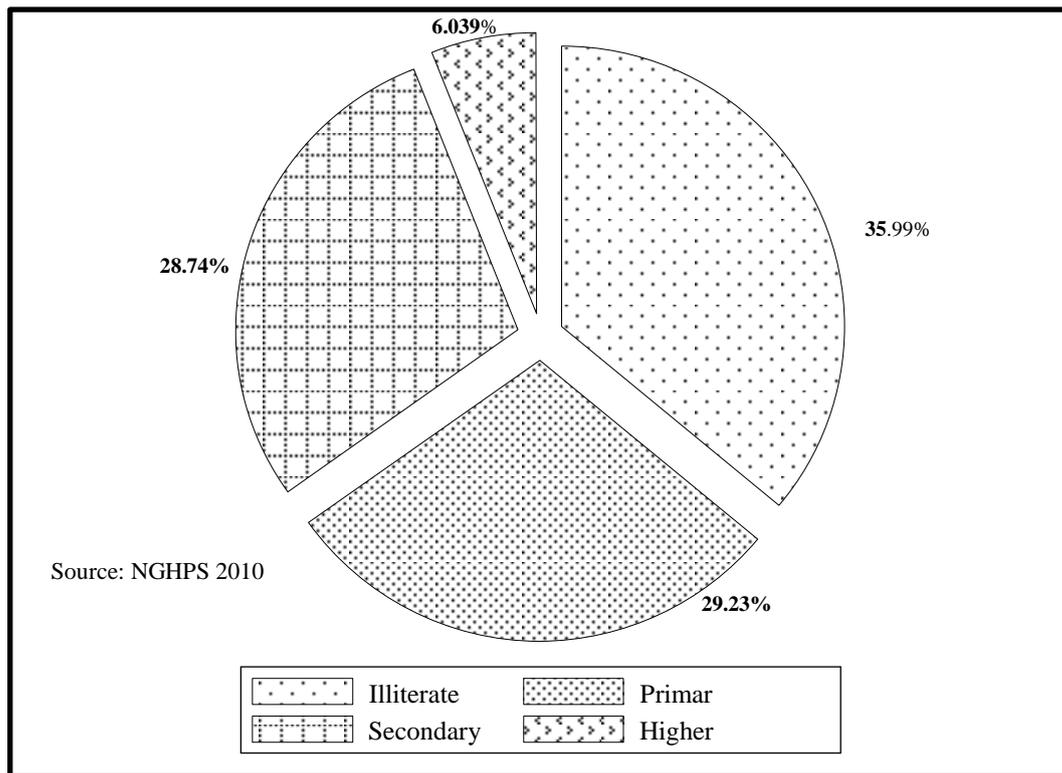
Figure 4-3 Educational attainment among urban elderly Nigerians by age and gender
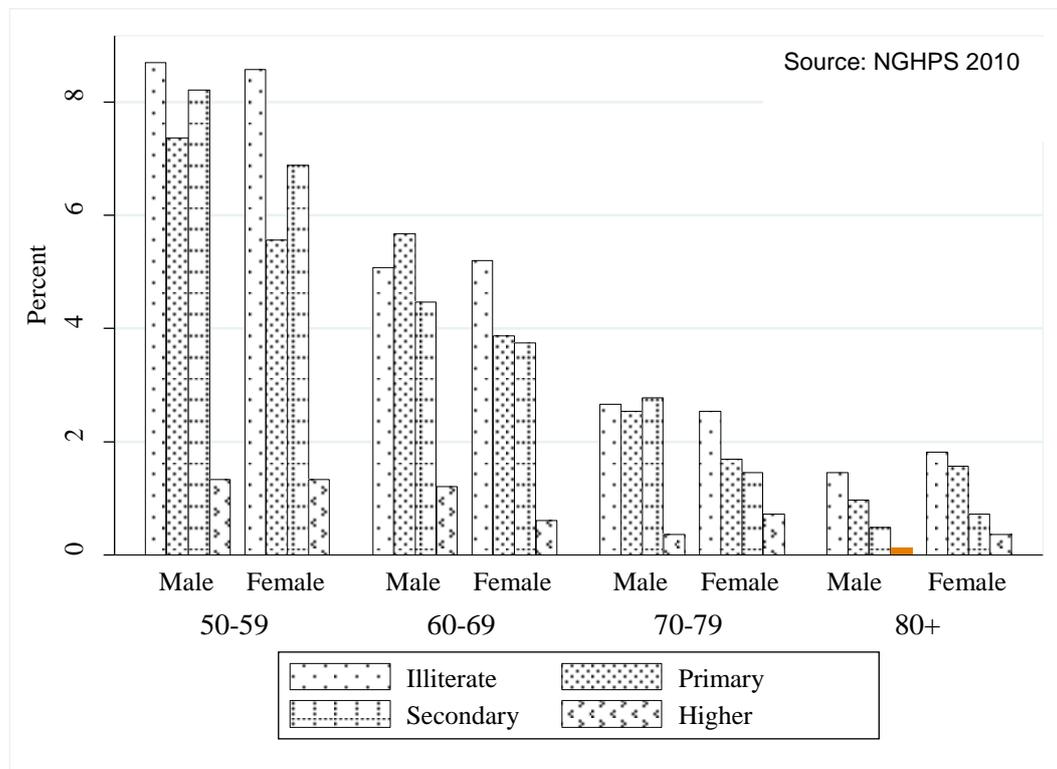
On disaggregating the educational attainment data by age and gender, it is clear that there is a higher prevalence of highly educated elderly females than males at advanced ages. However, there are no obvious differences in educational attainment at the pre-retirement age of 50-59 years old. However, between the ages of 60 to 69, there was a higher prevalence of highly educated males than elderly females. Besides revealing that education attainment differs by age and gender among the elderly. It would be premature to conclude that these age and gender disparities are likely to be welfare-reducing as it depends on the utility of such education rather the qualification itself. Thus, I go on to examine the links between educational and occupation, and in relation to employment income.

4.3.4   Linking Education and Occupation to Employment Income

In the economics literature, education and occupation are intricately linked. Highly-educated individuals are more likely to be in professional and well-paid jobs. Those that work in Agriculture are likely to have lower levels of education compared to other sectors. Income generating opportunities in the labour market are likely to be determined by educational levels

and years of experience (Appleton et al., 2008;Appleton, 2000). Based on the nature of the employment sector in Nigeria, majority of the traditional professional skills occupations can be found in the formal sector. I exploit the data on educational attainment in the NGHPS to reveal educational differences in labour force participation in the formal sector.

Table 4-11 shows that urban elderly people with higher levels of education are still able to be gainfully employed in the formal sector (public and private) even beyond the official retirement age of 60 years old compared to the other elderly groups. Similarly, educational differences after a retirement age of 60 years old are interesting. In all sectors, those with higher degrees had the highest percentages of urban elderly in the retailing, education, transportation, and public administration sector. Conversely, about 66% of illiterate elderly people in Urban Nigeria engaged in Agriculture in 2010 compared to 17% of highly educated urban elderly people. From the NGHPS, those with lower educational attainment were mostly involved in small-scale urban agriculture.

Table 4-11 Employment status of retired elderly aged 61 years and above, by Occupation and Education

Employer	Higher Edu	Secondary	Primary	Illiterate
Agriculture	16.67	56.67	71.43	65.71
Manufacturing	-	3.33	5.36	4.29
Professional services	-	1.67	-	-
Construction	-	3.33	1.79	1.43
Transportation	8.33	-	-	2.86
Retailing	41.67	20.00	8.93	18.57
Personal services	8.33	8.33	3.57	-
Education	16.67	3.33	3.57	-
Health	-	1.67	-	1.43
Public Administration	8.33	1.67	5.36	5.71
Total	100.00	100.00	100.00	100.00

Note: All figures are in percentages. This distribution applies to older people aged 61years and above (assuming the chosen retirement age 60 years).
Source: NGHPS 2010

Education is likely to be important in securing formal sector work in various occupational types. But the high levels of employment in the Agricultural sector for lower educational categories deserve further examination for all elderly groups to see whether this pattern will remain consistent. I begin by examining work participation in Agriculture within the last 7 days from the survey date for all urban elderly Nigerians. Table 4-12 reveals some interesting patterns. Overall, the labour participation rates in the last 7 days to the survey date conformed to the literature. About 45% of elderly Nigerians worked on a farm owned or rented by a household member; and only 7% worked for an enterprise or an external person. These figures higher than the average old-age labour participation rates in SSA, estimated at 40% in 2013 (UN, 2013a). This discrepancy may be because the UN's estimates are based on older persons aged 60 years and over.

Table 4-12 Percentage distribution of urban elderly aged 50 years and above in work, by gender

Type of work	All	Female	Male
Worked on own farm	44.67	46.22	43.29
Worked for someone else or an enterprise	7.01	6.63	7.36
Not in work	48.32	47.15	49.35
Total	100.00	100.00	100.00

Note: All figures are in percentage
Source: NGHPS 2010

Based on Figure 4-4, elderly women's current labour participation is higher than their male counterparts. From the data, one cannot tell whether this pattern is consistent throughout the year. At the point that retirement kicks in at age 60, the survey reveals that more men are in the labour force compared to women, a difference of almost five percentage points.

Figure 4-4 Proportion of economically active urban elderly by age category, and gender, 2010
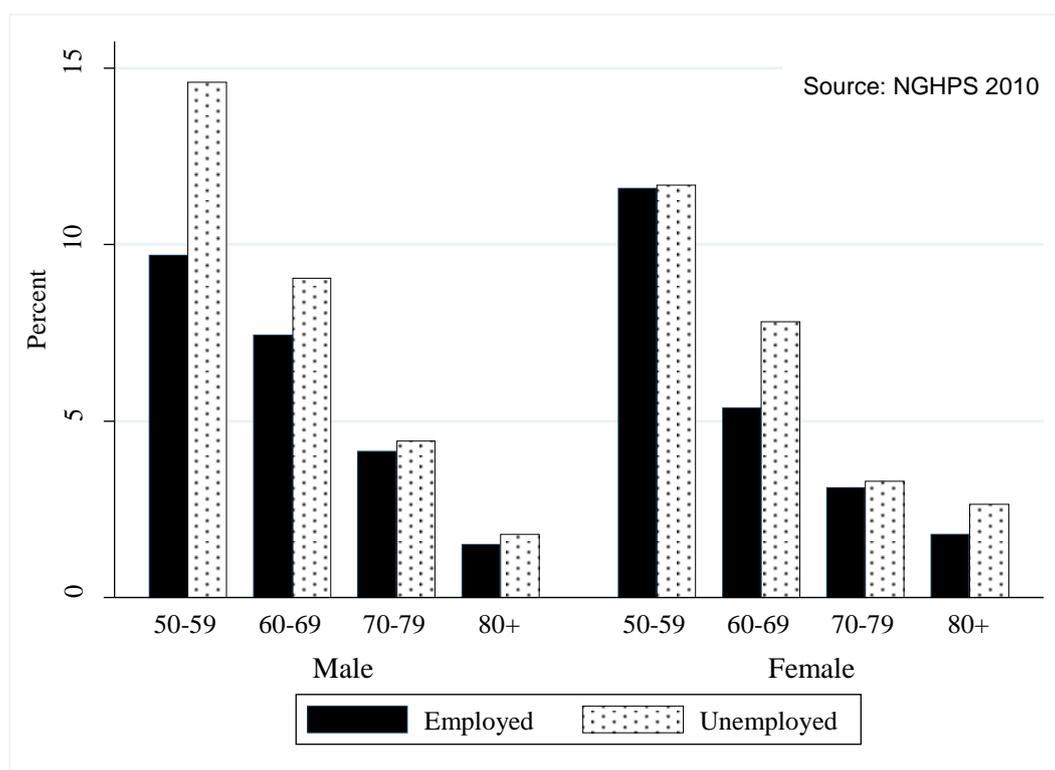
Education can also influence the hours worked and wage earnings. Those that are more educated may have been able to accumulate assets over their working life, and may not need to work as much. The NGHPS data contains individual-level data on wages and duration of work data in months and weeks over a 12 month period, and hours in the last 7 days from the survey date, for both primary and secondary jobs, providing a unique opportunity to enrich this study's discussion on the work status of elderly people in Urban Nigeria. I converted the weekly data into days worked over the last 12 months for the analysis, and utilised chi-square statistics to examine the association between wage earnings and hours worked.

Indeed from Table 4-13, I see that between the ages of 50 and 59 years old, mean days worked was higher than that for retired elderly. Chi-square statistics revealed significant differences between educational attainment and mean days worked at pre-retirement old age (50-59 years), (Chi-square =13.121, P=0.0044). This tendency of those aged 50-59 years old to be gainfully employed is in line with Hunter and May's findings in their study on near-old (50-59) South Africans [in Maharaj (2012)]. Using a life-course framework and data from the National Income Dynamics Study, they investigate the employment, health status, and income of near-old South Africans. They found that those aged 50-59 years had better economic status than younger age groups. Although, the authors agree that beyond this age, economic situation likely worsens as older people, which make the State's old age pension (OAP) payable to elderly from the age of 60 years necessary.

Table 4-13 Mean days worked by urban elderly Nigerians in pre-retirement age (50-59 years old), by educational attainment

Mean Days Worked**	Mean	SD	Min	Max
All	271.38	111.05	0.0	364
Illiterate	268.74	109.85	14.0	364
Primary	307.63	83.38	56.0	364
Secondary	233.49	128.26	0.0	364
Higher	315.78	73.12	168.0	364

Source: NGHPS 2010. SD means Standard deviation.
**p<0.01 refers to 1% significance level

The differences in work status amongst elderly people could also be explained by gender differences. From the findings in Table 4-14, labour force participation beyond retirement ages remains consistent for male elderly, women seem to disappear from the survey of the work force at 61 years and over, and re-appear at higher ages from 66 years and over. Overall, more women participate in the labour force compared to men at advanced ages in Urban Nigeria.

Women's participation in one sector more than the other could be linked to their status. As Oppong (2006) points out, in Sub-Saharan Africa, the agricultural labour force is increasingly ageing and female. This suggests that gender is likely to be a key factor in Agriculture. The table below shows that there is indeed gender differences in the average days worked in a year. Women tend to work more days on average than men. Although, I do not find any statistically significant gender differences in days worked in the last 12 months (Chi-square= 1.488, P=0.2225) at post-retirement ages, at pre-retirement old age of 50-59 years (Chi-square =0.118, P=0.7313), and for the whole elderly sample (Chi-square =1.196, P=0.2740).

Table 4-14 Mean days worked post-retirement at both 60 years and 65 years by gender, Urban Nigeria, 2010

Days worked per year	All	Female	Male	Difference
Assuming retirement age = 60 years				
Mean	261.74	270.43	254.70	NS
S.D	108.55	105.02	111.19	
Min	0.0	0.0	0.0	
Max	364	364	364	
Assuming retirement age = 65 years				
Mean	267.97	271.05	265.19	NS
S.D	105.86	106.71	105.57	
Min	0.0	0.0	21.0	
Max	364	364	364	
Note: NS denotes not significant at the 5 or 10% level				
Source: NGHPS 2010				

So far, gender does not seem to be associated with differences in days worked at older ages. Similarly, using both the 60 and 65 years retirement starting point ages do not seem to make a difference in the mean days worked amongst older Nigerians. The estimates of the mean days worked in Table 4-12 are comparable to the estimates in Table 4-11. Therefore, this finding from the NGHPS confirms our argument so far, that the concept of westernised notions of retirement ages has little or no bearing on the economic activities of urban elderly Nigerians. The rest of the analysis in this chapter and other chapters of the thesis are based on urban elderly Nigerians aged 50 years and above.

Mean Work Days, Education, and Occupation: Descriptive Analysis

So far, agriculture is the biggest employer of labour of elderly people in Nigeria for less educated urban elderly Nigerians. I therefore examine the likelihood of working on a farm based on educational levels as a crude test of this observed link. Table 4-15 presents the bivariate analysis results. The NGHPS provides confirmatory evidence that educational attainment is likely to influence the type of work available to older people in urban Nigeria. Although, there is growing evidence that working in Agriculture does not necessarily imply a loss of welfare as previously thought. Using the NLSS 2003/2004 and multivariate analysis, Appleton et al. (2008) found no significant welfare differences between those in agriculture and formal wage employment. However, Appleton's study was not specifically aimed at older Nigerians, so it may be difficult to discount empirical evidence that labour-intensive agricultural work can be health reducing for older people in developing countries (Case and Deaton, 2005b).

Table 4-15 Bivariate analysis of days worked and educational attainment, urban elderly Nigerians, 2010

Dependent Variable (1= worked on a farm in the last 7 days, 0 otherwise)		
Reference education category = Illiterate		
	β	SE
Primary	-0.040	(0.040)
Secondary	-0.073	(0.041)
Higher	-0.295***	(0.071)
N	837	

Standard errors in parentheses
Note: * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%. Source: NGHPS 2010

Wage Income Earnings

Table 4-16 presents the summary statistics of wage income for elderly people from both primary and secondary jobs. The dollar equivalent of mean annual earnings at 2010 prices was $312. Comparing with the poverty line of $1.25 per day, $456 per year[34], this is significantly less. Based on this data from the NGHPS, the estimates suggest that earnings from wages may not be sufficient to meet basic needs. I examine wage earnings by gender for any significant differences.

Table 4-16 Mean Wage income and Gift-in kind, by source, urban elderly Nigerians, in Nigerian Naira, 2010

Source of Earnings:	Mean	SD	Min	Max

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[34] (1 Nigerian Naira = $150 US dollars) at 2010 prices

Total income (primary job)	43155.24	189522.01	0.0	3000000
Total income Secondary job	3496.04	32976.17	0.0	780000
Total gifts in kind (primary job)	189.72	3853.14	0.0	111600
Total gifts in kind (secondary job)	24.53	798.58	0.0	26000
Total wage income	46865.52	195775.40	0.0	3000000

Note: SD means Standard Deviation.
Source: NGHPS 2010

As expected, there are wage earning differentials based on educational attainment. Table 4-17 suggests that with education, earning capacity increases. These differences are significant (Chi-square =20.791; probability = 0.0001) at the 1% significance level.

Table 4-17 Summary statistics of total wage income of urban elderly Nigerians, by education, in Nigerian Naira, 2010

Level of Education***	Mean	SD	Min	Max
Illiterate	38001.35	144088.53	0.0	1044000
Primary	38226.86	131662.02	0.0	960000
Secondary	60970.59	244334.46	0.0	3000000
Higher	138385.68	394397.11	0.0	2400000
Total	50746.78	198629.82	0.0	3000000

Note: Total income = income from both employment and monetised gifts in kind from both employment.
*** denotes significance at the 1% level SD means Standard Deviation.
Source: NGHPS 2010 (N=827).

For ease of discussion, I specify and use the logarithmic form of total wage, and use bivariate regressions to examine the relationships. I found that working in agriculture was negatively related to earnings, reducing earnings by 58% compared to other sectors. Also higher educational categories increased total wage income but this effect was not significant. This study's chi-square statistics did not reveal significant differences. Table 4-18 presents the bivariate results.

Table 4-18 Bivariate regressions of log total wage of elderly occupation, education, gender

DV = Log of total wage income	β	SE
Occupation: Working on a farm	-0.582**	(0.195)
Education: (Ref: Illiterate)		
Primary	-0.130	(0.276)
Secondary	0.135	(0.273)
Higher	0.203	(0.403)

Note: Three separate regressions were estimated. Standard errors in parentheses.
Source: NGHPS 2010.

So far, I have found some robust evidence that there are intra-aged disparities among elderly Nigerians based on the selected demographic and socioeconomic variables.

4.4 Barriers to working among urban elderly Nigerians in the NGHPS

In Section 4.3.4, I highlighted the finding that that not all elderly people are working. The NGHPS captures the barriers that older people give for why they are not actively seeking work. The NGHPS 2010 asks respondents about such barriers to work over the past 7 days to the survey date. The qualitative responses are quite informative, and are presented in Table 4-19 below.

Table 4-19 Proportion of elderly 50 years and above reporting barriers to work, and by gender in 2010

Barriers to seeking work post- retirement	All	Female	Male
Studying	71.55	72.36	71.05
Housewife/Childcare	7.73	6.03	9.21
Too old/retired	2.58	2.51	2.63
Sickness/Illness	3.28	3.02	3.51
Disability	0.47	1.01	-
Waiting for employer	1.64	2.01	1.32
Waiting for busy season	1.17	0.50	1.75
Other reasons	11.48	12.56	10.53
All	100	100	100

Note: All figures are in percentages. N=427.
Source: NGHPS 2010

Interestingly, a very modest 2.6% of urban elderly people reveal that they are not working because they are too old or retired, which may explain the higher levels of work participation among urban elderly Nigerians. Culturally, urban elderly Nigerians do not seem to consider old age to be a barrier to work. It is rather striking that about 72% of urban elderly people not in work state that they are not seeking work because they are studying. Examining educational attainment levels of these elderly people may reveal the characteristics of those studying as shown in Figure 4-5 below.

Figure 4-5 Educational attainment of unemployed urban elderly Nigerians currently studying
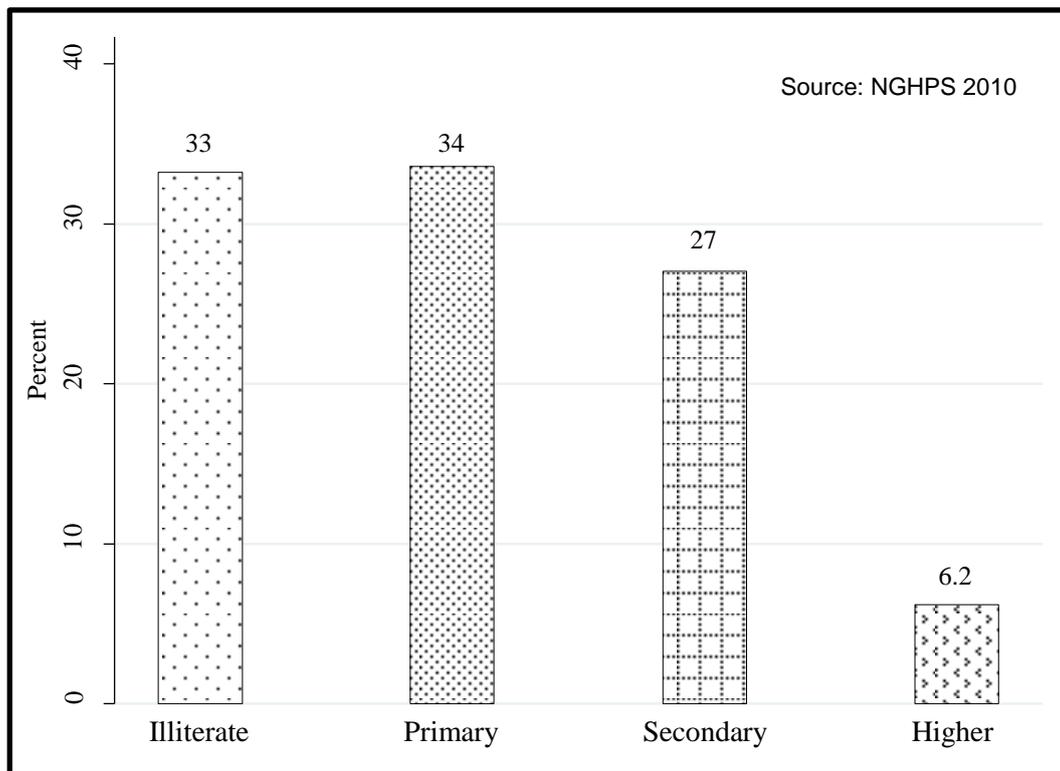
From the figure above, one can see that across all educational categories, respondents are studying. I disaggregated these responses by educational attainment to examine whether it is mostly low-educated elderly that are improving their literacy. Given the low literacy rates among the elderly in Nigeria, it is reasonable to assume that some older people may actually be studying to increase their literacy skills. According to the National Commission for Mass Literacy, Adult and Non-Formal Education (NMEC), the literacy rates for those aged 50 years and above for male and female were 40.9% and 14.6% respectively (NMEC, 2008). As I discussed in Chapter 3, there has been a push over the years to improve universal basic education through adult learning schemes in Nigeria. Across lower educational categories, there are more elderly people studying than those with advanced degrees. This supports the idea that improving one's literacy may be likely reason.

On the other hand, it could be a matter of reporting errors at the time the questionnaire was being administered, as 'studying' is the first option in the particular question in the NGHPS questionnaire—S3Q9. It is impossible to verify this aspect from the NGHPS but it throws into question the reliability of the proportion of elderly Nigerians that are studying for whatever reason.

I found some counter-intuitive evidence with the second most common reason for not seeking work, that is, childcare or housewife duties. More elderly men than women tend to consider this to be a key reason for not looking for work. I also examine time spent collecting firewood and water, which has been collected on an individual basis. Table 4-20 shows that there are men spending longer doing household chores, although these differences were not remarkable. Does time spent doing housewife duties affect days worked?

Table 4-20 Summary statistics of hours spent collecting firewood in the household by gender, urban elderly Nigerians

Gender	Mean	SD	Min	Max	Difference
Female	0.47	1.41	0.0	11	NS
Male	0.76	4.30	0.0	57	NS
Total	0.63	3.28	0.0	57	

Source: NGHPS 2010; NS-not significant; SD – Standard Deviation. Figures are in hours.

Table 4-20 also suggests that there is a weak relationship between time spent doing housewife duties and days worked. The coefficient is positive suggesting that it does have a positive effect, if insignificant. On explanation of this finding is that most elderly people, whether in or out of work have undertaken household chores as a part of their life which is separate from wage-earned work. Therefore, it is likely to be a poor indicator of barriers to work for elderly people in Nigeria. And if it is, one would need more data on the specific housewife duties being undertaken which may differ somewhat from the usual household chores of collecting firewood and fetching water.

This is a questionable finding as the NPC's 2003 report on elderly Nigerians revealed that more women than men were housewives or unpaid family workers. Existing evidence on the disparities between men and women in unpaid domestic labour in SSA reveals that women are often expected to undertake household tasks hence women's off–farm labour force participation remains low (Koolwal and Van de Walle, 2013). The social gerontological literature maintains that gender relations in labour division in developing countries creates social hierarchies which disadvantage older women in relation to older men (Calasanti, 2010a, b;Chant, 2013;Oppong, 2006). Calasanti theorises that as a concept in gerontology, gender differences are bound to exist because men and women access resources and are assigned responsibilities subject to by a naturally occurring social stratified groups. These differences can be seen in the gender division in labour which affect financial status in later life. Therefore, it is quite strange that more men report housework as a barrier to work than women.

Besides studying, the NGHPS suggests caregiving and illness are important barriers for seeking work amongst urban elderly Nigerians. While the NGHPS does not contain information on

direct caregiving activities that is being provided by the older person, studies have shown that elderly people typically care for their grandchildren or in cases where the adult child has died from illness, the responsibility for caring falls on grandparents to care for the child (Duflo, 2003;Zimmer and Dayton, 2005;HAI, 2003;UNFPA and HAI, 2012). An elderly person may also care for a chronically ill spouse. Unfortunately, domestic and unpaid labour within the household is rarely taken into consideration in household surveys in Nigeria making it difficult to value unpaid economic contributions of elderly people to the households. If this type of labour is to be valued, labour participation rates among older people would even be higher than current estimates. This is one limitation of the NGHPS and I further reflect on this aspect in relation to consumption allocation in Chapter 6; and in Chapter 8, I shall reflect on this gap in the NGHPS in researching elderly Nigerians.

Following on from the barriers to labour participation and with only 3.28% of urban elderly Nigerians cited illness as a barrier to labour force participation, the health characteristics of urban elderly Nigerians and its role in explaining work status differences need to be understood. In Section 4.5, I examine the health functioning problems of urban elderly Nigerians and other health indicators, the links between health status and wage earning, health spending, and limitations in using these health dimensions in the NGHPS.

4.5   Health Characteristics of Urban Elderly Nigerians

Table 4-21 contains some of the health information that was captured in the NGHPS. The percentage distribution of self-reported ADL_p suggests that elderly Nigerians are typically more optimistic about their health, moreso elderly men. This finding is consistent with some studies in the literature. Baiyewu et al (1996) found that 95% of elderly Nigerians in the South West reported no impairment in ADL (activities of daily living), or functional health status.

Table 4-21 Percentage of urban elderly self-reporting health difficulties, by gender

Activities of daily living (ADL_p)	Female elderly	Male elderly
Can you do vigorous activities like running, lifting heavy objects, participating in sports or doing hard labour?	10.28	12.06
Can you walk uphill?	10.06	11.70
Can you do activities such as bending over or stooping	6.51	6.21
Can you walk over 100 metres?	10.85	10.46
Can you walk more than 1 kilometre?	7.10	8.16
Note: All figures are in percentages Source: NGHPS 2010, Nigeria.		

Self-reported health status is the single most common method of assessing the health of elderly groups in the empirical literature. It is also powerful measure of assessing the health status of elderly people (Ettner, 1996; Smith, 1999; Deaton and Paxson, 1998; Appleton (2000); Benzeval et al., 2001; Frijters et al., 2003; Burgess et al., 2004). It is a simple subjective measure of health that provides an ordinal ranking of perceived health status, and it has been shown to be a powerful predictor of subsequent mortality for various socioeconomic groups (see e.g. Idler and Kasl, 1995; Idler and Benyamini, 1997; Burström and Fredlund, 2001).

Abdulraheem (2007), in his study of elderly Nigerians in the Southwest, finds that the most prevalent of illnesses for the elderly were functional – body pain, poor eyesight, joint pain, fatigue, depression, and decreased mobility. Health seeking behaviour amongst elderly Nigerians was found to be very low, with about 69% of respondents never visiting a hospital in the last one year. Home remedies were found to be the most common method of health care for the elderly. In addition, more than 60% self-reported their functional health status as bad.

Other Health Problems of Urban Elderly Nigerians

Later-life health studies on the Nigerian elderly suggest that elderly groups experience a decline in physical and mental capabilities unique to old age, which increase dependence for care (Barrientos et al., 2003;UNDP, 2009;Alubo, 2001;Baiyewu et al., 1997;Abdulraheem, 2007;Bella et al., 1993).

In a community survey of elderly Nigerians 60 years of age and above, Bella et al. (1993) found that the most common health problems of elderly people were 'musculoskeletal, dental, ocular, and cardiovascular disorders'.

In their study of elderly Nigerians in the Ibadan community, in Southwest Nigeria, and African-Americans in Indianapolis, Hendrie et al. (2001) found that Alzheimer's disease was the most common type of dementia amongst older people, indicating that it is not as rare as is often believed to be in Sub-Saharan African countries, although it is lower than that found amongst African Americans. Similarly, Sokoya and Baiyewu (2003) found incidences of geriatric depression to be higher among poor elderly Nigerians.

Akanji et al. (2002) highlighted that the most common non-communicable diseases that affect older people in Nigeria are 'blindness from cataracts, osteoarthritis, and neurodegenerative diseases'.

These studies imply that old-age diseases are unique and critical to elderly people in Nigeria which demand special care and support. Geriatric care requires relatively expensive prescription drugs (Wei et al., 2006), and a higher need for inpatient facilities (Sanya et al, 2008).

In the absence of social health insurance and social security systems in Nigeria, elderly people may fail to seek care if they cannot afford to pay (Brinda et al., 2014. In fact, this is the case in Nigeria. Using medical discharge records, Sanya et al. (2008) show that elderly people are more likely to prematurely discharge themselves from a teaching hospital because they cannot afford to pay medical fees. Recent research elsewhere has also shown that elderly people are frequently plagued by chronic disease (Wang et al., 2015) which increases the cost burden on households in which they head or reside, which constrains household budgets and time resources.

According to Alam (2006), when elderly people are limited in ADL, they are functionally dependent on household members or external paid care support (also see Aboderin, 2013; Olaniyan et al., 2011). Yet, this area has been greatly overlooked in the literature in Nigeria. The NGHPS captures useful information on ADL limitations, and I have discussed in detail the validity of the ADLp measure used in this chapter in Chapter 4. The NGHPS also captures information on the age that functional impairment began but for only the sensory ADL difficulties (ADLs). Therefore, I also examine the age at which disability began was collected in the NGHPS. Through this, I can ascertain whether on average they are typically old-age related impairments or a life-long impairment. I can also determine at what age functional impairments begin on average for elderly Nigerians. Unfortunately, the NLSS 2004 does not contain comparable information on health status. Therefore, I only examine the case of urban elderly Nigerians using the NGHPS 2010.

4.5.1   ADL Limitations of Urban Elderly Nigerians: Evidence from the NGHPS

Table 4-22 presents the proportion of elderly Nigerians with six ADL difficulties in both the ADL_p variables. Some interesting results emerge. In all the six areas, there are considerable disparities in the self-reported health status. In addition, overall, elderly Nigerians are clearly optimistic about their health, going by the small proportion that report that they have ADL limitations, which is 913 out of the 1,063 urban elderly Nigerians that responded to the ADL questions. Interestingly, this tendency for optimism in ADL self-reports conforms to the finding of Baiyewu (1997), where about 95% of elderly people self-report very limited functional impairments, in a sample of 951 elderly people 60 years of age and over in Nigeria. Culturally, it would seem that elderly Nigerians understate their functional limitations.

Nonetheless, there are some observable patterns in the ADL limitations. In the physical domain, ADLp, namely running, walking, and bending, had the highest proportion of elderly reporting difficulties. Therefore, the NGHPS suggests that mobility issues are the main issue for elderly with respect to their functional health.

This implies that the elderly with such impairments are likely to depend more on others to get around the house or they may need to use mobility aids depending on the severity of the impairment. Given the objective of this chapter, the economic implication of functional impairments needs to be examined.

Table 4-22 Health status of urban elderly Nigerians with ADL$_p$ limitations, 2010

ADL$_p$	Percent	N
Running	11.24	119
Walking uphill	10.94	116
Bending or stooping	6.42	68
Walk > 1km	7.64	81
Walk >100m	10.66	113
Source: NGHPS 2010. Total elderly sample N =913		

According to Strauss et al. (1993), most elderly begin to report problems from the age of 40, which then worsens with age, based on their study of adult ill-health in the United States, Jamaica, Bangladesh, and Malaysia.

Table 4-23 reveals lower mean ages for concentrating, self-care, and communicating. The NGHPS also suggests that on average elderly Nigerians begin experiencing ADL difficulties in sight, hearing, and climbing steps much earlier, from 34 years old. This is at least 6 years younger than the 40 years reported in Strauss et al. The rationale for using the beginning age of 50 years for an elderly person is even justified based on this finding. If physical functioning problems begin much earlier, then elderly Nigerians have about ≥15 years to manage an ADL difficulty based on average life-expectancies in Nigeria. Another implication is the extent to which health status affects earnings and income and whether health status reporting differs by gender. The summary information is reported in the next section.

Table 4-23 Mean age of when ADLs difficulty begins for the urban elderly, 2010

ADL type	Mean	SD	Min	Max
Seeing	36.22	25.70	0.0	68
Hearing	36.67	35.72	0.0	83
Walking	34.54	28.70	0.0	75
Concentrating	11.50	27.69	0.0	83
Self-care	17.57	29.56	0.0	84
Communicating	13.75	29.78	0.0	84

Note: Sample size, N=44; SD – Standard Deviation
Source: NGHPS 2010

Distribution of ADLp, by Gender

Table 4-24 shows that gender differentials in ADL difficulties are modest. Elderly men report a higher share of mobility problems compared to women, although this difference is very modest: less than one percentage point. From the NGHPS, it would seem that men and women equally report similar rates of problems.

Table 4-24 Health status of urban elderly Nigerians with ADLp limitations, by gender

Gender	Female		Male	
ADLp	Percent	N	Percent	N
Running	10.40	52	11.99	67
Walking uphill	10.18	51	11.63	65
Bending or stooping	6.59	33	6.26	35
Walk > 1km	7.19	36	8.05	45
Walk >100m	10.98	55	10.38	58

Source: NGHPS 2010. Total elderly sample N =913

Figure 4-6 below examine the number of limitations by gender. Elderly women tend to report having one limitation compared to men, where a higher proportion report more than one ADL limitation. Are men more disadvantaged in health? One explanation being put forward by Strauss et al. (1993) for gender differences is the issue of differential mortality. Strauss et al. (1993) examined the socio-economic determinants of elderly people in Bangladesh, Jamaica, Malaysia, and the United States. Using a reduced form version of Grossman's model, and data from four country surveys, the authors find that women report more health problems than men, even after controlling for socio-economic factors. They posit that given that men have lower life-spans than women, it is possible that those that are living who report difficulties have been understated because those who have such limitations have died. Using data on age and gender-specific death rates in the various countries, they re-calibrate the proportions of those that report

that they are in fair and poor health to include those that have died. The NGHPS does not allow such estimations.

I also note the lack of clear-cut evidence regarding gender differentials in health statuses in Africa compared to South Asia. Appleton (2000), in a review of the literature, highlights the inconsistent evidence in the literature based on Svedberg's (1990) study. Studies like Strauss et al. and Klasen (1996) utilise life-expectancy tables to evidence the longevity differences between men and women. Klasen (1996) compares life expectancy tables in Africa and Europe to determine excess female mortality.

Case (2004) found that men and women utilise health care differently, and whether or not this translates to better health status remains a matter of debate. The take-home point here is that gender affects health status in some way. Therefore, gender becomes an important control variable to consider in an empirical model on health. This treatment of gender as a control variable will be re-visited in Chapter 7, in addressing the second primary question of the study. So, while this thesis is not a gendered study on health care use, the descriptive examination of the NGHPS has revealed that gender may be correlated with health status.

Figure 4-6 Showing gender differences in number of ADL limitations by urban elderly Nigerians

Source: NGHPS 2010

Graphs by sex, and total
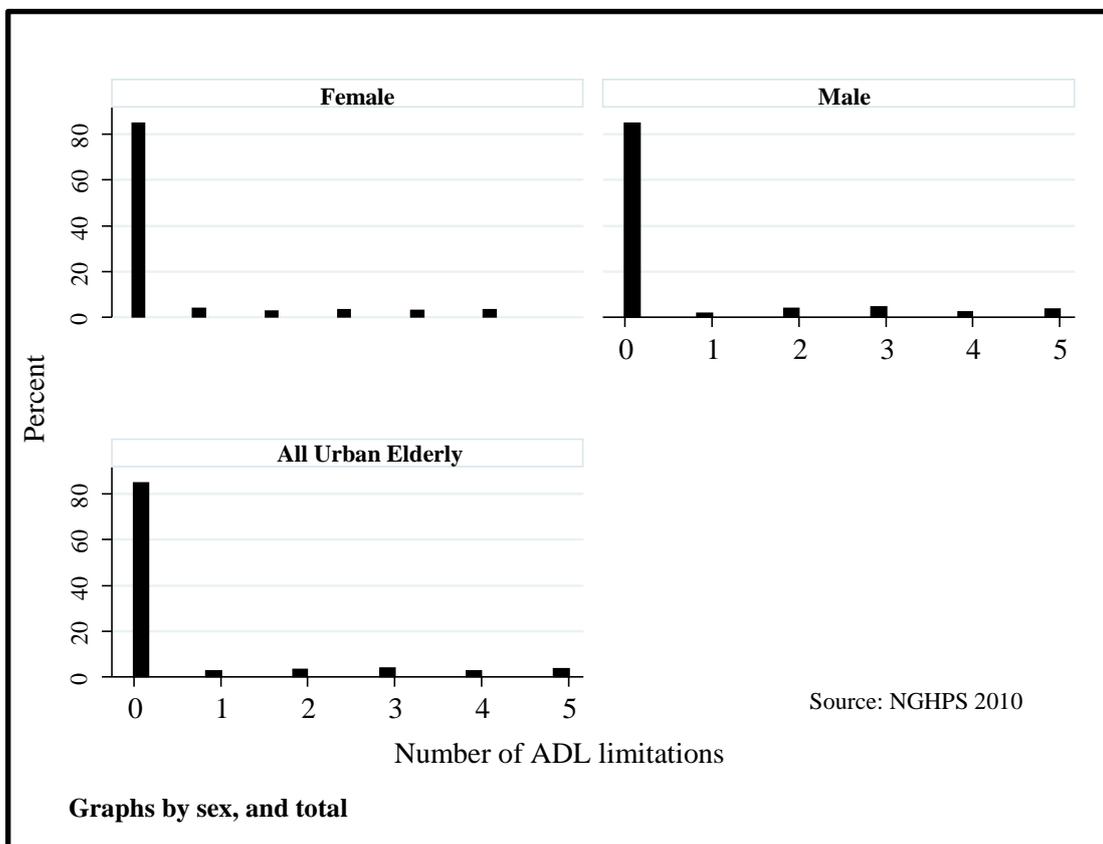
Having examined the percentage of elderly Nigerians self-reporting a functional impairment, I proceed with examining other health indicators of elderly people in Nigeria. The NGHPS contains information on the nature of illnesses reported by elderly people in the NGHPS within a 4-week period collected, which is collected in the second round of the survey. I discuss these illnesses below.

4.5.2   Other Indicators of Health Status among Urban Elderly Nigerians

In this section, I examine other health status indicators in the NGHPS to further highlight the health status of elderly Nigerians. Morbidity patterns, health care utilisation, and sick days can be indicative of chronic illnesses (Wang et al., 2015). The NGHPS contains information on illnesses in a 4-week period, as well as health utilisation. The number of sick days resulting from the illness was also collected. Hospitalisation information in the 12-month period was collected, as well as the number of hospital nights. This rich information would highlight the health status of elderly Nigerians. It also helps set the background for the links between health and economic burden of a bad health status. I also use individual income quintiles for elderly Nigerians.

Table 4-25 shows that only 13% (N=1063) utilised health services in the 4-week period to the survey date. Seeking care for acute illnesses is the most prevalent reason why urban elderly consult with a GP – 58% of urban elderly households reported an illness episode in the 1-month period. Unfortunately, the NGHPS data does not contain information on the type of acute illness. However, acute illnesses tend to be onset and for a short course. In all types of illnesses, male elderly heads were more likely to seek health care in comparison to female elderly heads, although this difference was not statistically different. In the four-week period, only 15% consulted with the doctors regarding preventative care.

Table 4-25 Morbidity patterns of urban elderly by type of illness and by gender

Type of illness episodes in a 4-week period	All	Female	Male
Preventive care	15.0	19.0	10.71
Acute illness	58.0	55.0	62.50
New injury	5.80	4.70	7.14
Follow up appointment for chronic illness	12.50	14.10	10.71
Other	8.70	7.20	8.94
N	120	64	56
Source: NGHPS 2010 data			

Table 4-26 presents the mean illness days, by gender. These gender differences were not significant (Chi-square =1.267, P=0.264) but there were only 87 cases reported for elderly people which is relatively small and may affect the power of the statistical test. More importantly, the use of illness days is likely to be a poor measure of the impact on daily life in Urban Nigeria as this time horizon may simply be too short to understand its impacts of welfare. I discussed some of these issues earlier.

Table 4-26 Mean illness days by gender, urban elderly Nigerians, 2010

Gender	Mean	SD	Min	Max	Difference
Female	9.48	14.28	2.0	90	NS
Male	7.74	6.80	2.0	28	NS
Total	8.71	11.56	2.0	90	

Note: NS denotes not significant at the 5 or 10% level, SD-Standard Deviation. Figures in days
Source: NGHPS 2010

4.5.3 Out-of-pocket payments and Health Expenditure

The NGHPS asks respondents where they go when they are ill. It also collects information on prescription drugs and hospital costs in 12 months. These are typically paid out-of-pocket health payments in Nigeria. Hence, the term 'out-of-pocket (OOP) health payment' is used. OOP health payments are the most prevalent method of financing health care costs in African countries. According to the WHO, 96% of private health expenditure in Nigeria is financed out-of pocket (WHO). In many developing countries, this primary use of OOP to finance health care has engendered concerns about its welfare-reducing effects on household welfare (Xu et al.;Xu et al.;Onoka et al.;Brinda et al.;Wang et al.;Somkotra and Lagrada;Chuma and Maina). One advantage of using OOP payments is that it is collected on an individual basis in the NGHPS. I, therefore, examine the OOP of elderly Nigerians and its components.

Out-of-pocket payments

Table 4-27 shows that on average elderly people spend more on prescription drugs with an average share of 98%, and hospital costs are 54%. The number of cases for those hospitalised within the year was minimal suggesting that this is a less common way of seeking health care amongst the elderly. The high costs of inpatient facilities could be one reason for this pattern. Sanya et al's (2008) study of medical admission records of elderly patients at a teaching hospital in South Western Nigeria reported a higher incidence of premature discharge due to high financial costs among poor elderly Nigerians, although

there was a higher demand for inpatient facilities among the elderly. I do not find any statistical differences in out of pocket health payments based on wages income and gender of urban elderly Nigerians.

Table 4-27 Mean share of drugs and hospitalisation as a percentage of annual out of pocket health payments by gender, urban elderly Nigerians, 2010

		Gender		
	All	Female	Male	N
Prescription drugs	0.982	0.978	0.986	453
SD	(0.10)	(0.11)	(0.09)	
Hospital costs	0.544	0.501	0.589	30
SD	(0.36)	(0.35)	(0.38)	

Source: NGHPS data 2010, based on authors calculations. Standard deviation in brackets. N=1063. Differences between male and female was not significant, nor between income groups.

Table 4-28 Mean prescription and hospital costs in Naira, by earnings quintiles

Health costs	All	Low earners	High earners
OOP			
N=1063	1693.78	1065.94	4815.37
SD	22767.33	6129.08	53951.10
Prescription costs			
N=435	3109.43	2186.44	7841.34
SD	22454.14	7103.03	53265.29
Hospital costs			
N=30	14929.67	6412.61	42914.29
SD	49299.36	11746.80	100246.57

Source: NGHPS data 2010 based on authors calculations. Standard deviation in brackets. N=1063. Differences between male and female was not significant, nor between income groups.
OOP: Chi-square results: (0.165, probability = 0.6846)

There are two emerging problems encountered in the analysis, which warrants a discussion on the limitations of using individual-level data for health spending. First, out-of pocket payments are primarily based on formal medical care. But, Table 4-28 suggests that the hospital-based services and pharmacies are not the only sources of medical care for urban elderly people.

Table 4-29 Mode of seeking care amongst urban elderly Nigerians, 2010

Source of medical care	All	Female	Male
Hospital	37.25	37.33	37.18
Dispensary/Pharmacy	53.60	50.66	56.14
Clinic	1.31	2.67	-
Home visits	5.23	5.34	5.13
Traditional healer	1.31	2.67	-
Other	1.31	1.33	1.28

Source: NGHPS 2010 data (urban elderly sample). N=1063. Differences between genders were not statistically significant.

Secondly, Table 4-29 shows a small number of cases for hospital costs (N=30), which is likely to affect the representativeness of the out-of pocket payments. In addition, in attempting to identify if individual income could account for differences in out-of-pocket payments, I used earnings quintiles. Still, a key assumption here is that there is no measurement bias in the earnings data in the NGHPS, which is difficult to confirm from a cross-sectional dataset. Earlier, in Chapter 2, I highlighted the disadvantages of using income as a measure of living standards.

In light of these limitations, it is clear that the analysis will have to be on a household level. Household health expenditure is likely to be a more appropriate measure of health spending and the NGHPS contains this information. It is worth noting that health expenditure data is not without its own problems in empirical work. One main issue is that of zero-expenditures. This zero expenditure problem occurs when there is large zero expenditures existing in the data for expenditure categories and OLS estimates ignore the zeros in the estimations. In the NGHPS, 333 out of 799 households reported zero health expenditures. The conventional way to circumvent this issue it to use 'corner solution models' (Cameron and Trivedi, 2009, pp.535-538; Wooldridge, 2010: pp. 667; O'Donnell et al. (2005). I re-visit these and other issues with respect to health expenditure in Chapter 7.

The discussion of the Nigerian's government's implementation of the national health coverage to its citizens to reduce the economic burden on health, but which currently excludes elderly Nigerians (Chapter 3), suggests that it would be useful to control for this element empirically, but as there are only ten urban elderly households in the NGHPS that reported having social health insurance, it limits its inclusion in the models as a control variable in Chapter 7. Growing evidence in the literature extols the welfare-protecting effects of the national health insurance (NHIS) in developing countries in tackling health-related consequences of economic vulnerability (see Arin and Hongoro (2013) for a thorough discussion), and I further reflect on the role of the NHIS in the policy implications section of Chapter 8. In the next section, I discuss the limitations of using the cross-sectional self-reported health measures in the NGHPS.

4.5.4 Limitations of Self-reported Health Measures

Self-Reported Health Measures: Reliability and Validity

The subjectivity of self-reported health measures increases the risk of measurement error. Kerkhofs and Lindeboom (1995) describe this as a 'state-dependent reporting bias', 'response category cut-point shift', or 'scale of reference bias'.

Crossley and Kennedy (2002) argue that individual response reliability is linked to age, income, and occupation. Examining the self-reported health statuses of 23,800 households using the 1995 Australian National Health Survey, they found that 28% of respondents changed their self-reported health statuses in the second questioning process, and older Australians are more likely than other socio-economic groups to revise their self-reported health statuses. Nevertheless, the authors emphasise that exhibiting a 'higher propensity to revise' does not necessarily imply that elderly people are unable to give a true picture of their self-assessed health.

One could easily argue that the way questions are administered may have implications for this discrepancy. The authors therefore specify a group composed of those who are asked to self-report on their health only once (control group), comprising of a random selection of individuals that were not selected to respond to the SF-36 health and wellbeing questionnaire and via interviews; they were compared with those who were asked twice (treatment group), comprising of a random selection of those who were asked to complete the SF-36 questionnaire and then interviewed. They found statistically different responses between both groups. This discrepancy in SRHS highlights the subjectivity of the responses, as well as the risk of attenuation bias from non-random measurement errors (Currie and Madrian, 1999), and it could have implications for applied econometric work that models self-reported health status.

Two explanations are typically put forward for this observed difference: The mode of questioning plays an important role. There is much evidence to suggest that people tend to be more forthright about sensitive issues relating to their health on a written questionnaire rather than a face-to-face questioning process (Tourangeau and Smith, 1996). Secondly, educated individuals are more likely to respond to health questionnaires compared to those that are illiterate. Strauss et al. (1993) assert that the test-retest method is commonly used in the United States and Southeast Asia to ensure the reliability of the responses through re-visits to respondents within a short period after the initial interview to ask the same questions. Many household surveys in Africa tend not to use the test-retest method, perhaps because such a practice is expensive, and it is partly due to the purpose for which the survey has been collected

in the first place (Chapter 4). The surveys that Strauss et al. (1993) refer to have been purposively collected to study health— for example, the RAND Health Insurance Experiment (1974 to 1982) and the WHO surveys in Malaysia. The authors note that validity relates to the 'internal consistency' of the SRHS (p.797).

Case and Deaton (2005) showed that the effects of health using SRHS can be standardised by correlating health conditions on SRHS— an approach that is similar to that Strauss et al. (1993). According to Strauss et al. (1993), individuals reporting physical functioning problems should be less likely to report excellent health. Other researchers have suggested other techniques to overcome some of problems in applied econometric work. For example, Doorslaer and Jones (2003) assert that the impact of any measurement error in self-reported health measures can be identified if there are heterogeneity effects in the health. Statistical tests of heterogeneity would identify how serious measurement errors are in an empirical analysis, and I address this issue further in the methodology section in Chapter 7.

The NGHPS does not have the self-reported health status which is based on perceived rankings of overall health, which is typically reported in developed countries. It contains information on self-assessed functional health statuses which is based on questions around the basic ADL. The development of the ADL classification to study the elderly and chronically ill can be traced to Katz et al. (1963). The authors developed an index of ADL based on biological and psychosocial limitations such as bathing, feeding, and going to the toilet. Using a sample of 1,001 individuals and 2,000 evaluations, they found that the ADL is an objective tool for studying the ageing process.

ADL (Activity of daily Living) limitations are a more superior measure of health status. The main strength of ADLs is that it is not based on extreme assumptions when studying adult ill-health. Using BMI and other anthropometric scores can be problematic as evidenced by Schultz (1996). The author used BMI and height scores to examine the impact of health on wages in two African countries— Cote d'Ivoire and Ghana. Using LSMS surveys, the author finds that a one unit increase in BMI is correlated with an increase in wages by 9% for women in both countries and 15% and 7% in Cote d'Ivoire and Ghana respectively for men. The issue here is that at time of the study, increases in BMI may have been synonymous with better health in these African countries. In recent times, it would be misleading to view increases in BMI as an indication of a better health status, especially in light of the growing concerns about obesity in African countries like Nigeria and Ghana (Akpan and Ekpenyong, 2013). Indeed, the functional model of health which defines health based on older people's perceptions of their levels of functioning is fitting of the Nigerian context and for a study of ageing. I now turn to examine

how good an indicator the study's ADL measure is by using correlations and bivariate regressions.

Verifying the validity of the ADLp measure

Case and Deaton (2005) have recommended that self-reported health measures be calibrated to illness patterns in the household survey to confirm validity. The NGHPS contains information on acute and chronic illnesses in a 4-week period—S4AQ2_PH, see Appendix B. I correlated these illness patterns (1= reports having acute and chronic illness, 0 otherwise) with the dichotomous variable: ADLp: 1= has ADL difficulty, 0 otherwise.

Table 4-30 presents the correlations between both health measures: illness and ADL difficulty. This study's SRHS measure, ADLp, is positively correlated with illness patterns. Thus, I go on to use the ADLp measure as this study's preferred measure of health status. It is worth noting that I could not verify the reliability of the ADLp measure due to the one-period data and I further discuss the implication of this data limitation in Chapter 7 and 8.

Table 4-30 Correlation and Association of other health conditions on ADL limitations, elderly households

Pearson Correlation	Illness	ADLp
Illness	1.000	0.231
ADLp	0.231	1.000
	β	SE
Bivariate Regressions		
	Illness	
ADLp	0.274***	(0.041)

Note: Standard errors in parentheses
* p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

4.6 The Analytical Process and Methodology

As I mentioned in the Introduction section, majority of the data analysis was done through a mix of descriptive analysis, bivariate analysis, as well as bivariate and multivariate regression. As in formal publications, I do not provide an account of all my working processes here, but each of the main empirical chapters has their respective methodology sections, which details the approach taken for the analysis.

This section mainly summarises the main methodology taken in the overall thesis. This study has been deliberate in its analytical approach by using simple multivariate in line with its cross-

disciplinary nature. The study uses a statistical software, STATA version 13 and 14 (StataCorp, 2013) in all the empirical work.

Model development

My working approach to model development was guided by a combination of Roger Tarling's stages of model development (Tarling, 2008) specified below, and a progressive empirical modelling strategy, described by early econometricians such as David Hendry as specific-to-general modelling strategy (see Campos et al., 2005 for a review).

- Clarify the research question
- Model specification
- Model estimation
- Testing functional forms
- Robustness tests
- Arrive at best functional model

Essentially, I began with available theories in the literature to make some assumptions about the probability structure of the model, after which I added variables to the model iteratively, revising to the starting point as required. In most cases, my starting point to address the first research question was to assume a linear model of consumption per capita as the dependent variable, and age and sex as explanatory variables (Chapter 6). In Chapter 7, the rich theoretical literature on modelling health outcomes provided a more straight-forward modelling approach.

This progressive modelling approach can be distinguished from the general-to-specific modelling approach advocated by the London School of Economics (Campos et al., 2005, p.3), where a general unrestricted version is selected as the starting point with millions of variables plugged in, and then the model is reduced to a restricted version by eliminating statistically insignificant variables to arrive at a parsimonious model.

But as with any method, there are issues with applying both the specific-to-general and general-to-specific approaches. For the former, the main issues primarily lie with the assumptions about functional forms. Not identifying the correct functional form may lead to a faulty linear model specification. It is important that the linear functional form is correctly specified, and that linear dependence does not occur in the regressors. There may also be some quadratic relationship between the regressors, wherein one of the regressors may be the square of the second regressor, as is the case in the consumption allocation model in Chapter 6, with the household size variable.

With respect to the general-to-specific modelling approach, there is often a trade-off between selecting and omitting variables based solely on statistical significance. Getting the balance wrong can lead to significant challenges in inferring useful results from the models. The problems with excluding statistically insignificant results from a model have been well-noted. For example, statistically significant variables may be significant based on chance, and excluding relevant variables may bias estimates due to omitted variable bias. For example, using different datasets, Reinhart (2015) demonstrated how excluding statistically insignificant variables could lead to the problem of overfitting which from models that produce false positives. In addition, he argued strongly that statistically insignificant does not mean 'no effect whatsoever" (p.82). As this thesis adopts a unique approach in its use of a consumption allocation welfare measure to identify why some urban elderly households may be economically vulnerable than others is novel, this thesis adopts the conservative view expressed by Reinhart (2015).

I adopt the specific-to-general approach and undertake the Box-Cox procedure to identify the functional form of the relationships with a Box-Cox bivariate analysis procedure to ensure that our model does not violate the conditions of a linear regression model. The Box-Cox procedure was developed by Box and Cox (Box and Cox, 1964). It is the conventional method for discriminating among various functional forms. It provides a more formal method to strengthen our process of model selection and elimination. The main advantage with the method is its flexibility in improving the models. Yet, like any method, there are inherent disadvantages which are well-documented in the literature. Noteworthy is the difficulty in undertaking a transformation analysis for a model with 9 or 10 regressors, especially where most enter into a model as dummy variables. As the Box-Cox procedure works on the assumption that all variables are strictly positive, therefore most of our variables will not need to be transformed. All the Box-Cox tests in Chapters 6 and 7 are bivariate Box-Cox tests with three specifications: linear, log-linear, and inverse.

Specification Tests

In testing my models for mis-specification, I used three mis-specification tests as follows: Ramsey RESET Test, Breush-Pagan LM-test, and Skewness-Kurtosis test. I also tested for multicollinearity by using the variance inflation factor (VIF) values, which is a conventional method for detecting multicollinearity (Greene, 2003;O'brien, 2007). All these tests have been performed using STATA commands. More details are provided in each methodology section in each of the main empirical chapters (Section 6.1 and Section 7.2).

Identifying Outliers

Summary data information was examined to identify the extent of missing data and outliers. These outliers were observed mainly in income earnings and were excluded from all the analysis. As consumption expenditure is the welfare measure chosen, these outliers are likely to not have any impact on the main empirical chapters.

4.7   Concluding Remarks

In most quantitative studies, the strength of the secondary data source is vital for meaningful analysis. This chapter has provided a through discussion of the relevant components of the NGHPS, including its strengths and limitations. It also documents the main methods and processes used in this thesis.

With guidance from the literature, certain demographic and socio-economic characteristics have been deemed important to identify economically vulnerable elderly. Some of these include: age, gender, education, occupation, consumption expenditure, health status, and health spending. The role of consumption allocation in examining economic vulnerability and its health-related consequences amongst individuals and households have been discussed. Based on this exploration of the NGHPS, I am satisfied that as a secondary data source, the NGHPS is suitable to address the two main research questions of the study.

One of its strengths is that it allowed an exploration of the demographic and socio-economic characteristics of urban elderly Nigerians on an individual level. This is one innovative contribution of the thesis. This analysis provided evidence of disparities with urban elderly groups and supports the view that, elderly people in urban Nigeria are indeed a heterogenous group, and they differ somewhat based on gender, education, occupation, and work status. More importantly, because of this diversity, there is a strong argument to be made, at least from a welfare perspective, that some older people are likely to be more economically vulnerable than others.

As a supplementary contribution, I found strong evidence that many elderly people continue to work beyond official retirement ages in Nigeria. Evidence from the NGHPS suggests that some elderly people do not participate in the labour force, while some continue to work beyond advanced ages. This conforms to the evidence on elderly people in the global South (Calasanti, 2010a;Maharaj, 2012;UN, 2013a).

In terms of occupation, there were high amounts of informal labour participation among urban elderly Nigerians. In particular, urban agriculture was a main feature of the type of work undertaken by urban elderly Nigerians, which may have implications for older people's health and wellbeing. This aspect of the NGHPS may need to be further verified as it was difficult to compare with official data figures on urban agriculture in Nigeria. As I discussed in Chapter 3, land and housing is often more restricted in urban areas so it is interesting that urban agriculture was the main occupation for older people in Urban Nigeria.

Informal labour was not sensitive to education. This was not surprising given the fact that majority of elderly Nigerian participate in self-employed work, and mainly in Agriculture. Doing farm work was correlated with lower levels of wage income compared to other occupational types. Therefore, working in manual occupations in old age to earn a living may have an implication for health (Case and Deaton, 2005b). This underscores the importance of controlling for occupational categories in this study's empirical model in Chapter 7.

Yet, there is one limitation of the cross-sectional nature of the NGHPS, as I found in this chapter. It does not allow the verification of all variables. Though, I was able to examine and verify the relevant health dimensions of elderly Nigerians in the NGHPS. The NGHPS contains useful information on self-reported health measures, which was verified to be valid. Although, confirming the reliability of the self-reported health measures will require multi-year data. It is important to confirm the reliability of the self-reported health measures in any future versions of the NGHPS as I found counter-intuitive evidence that many urban elderly Nigerians self-report low levels of functional limitations.

Then, controlling for age and gender effects, I examined the links between health status and earnings on an individual level and found an insignificant correlational relationship contrary to Grossman's theory. One possible explanation is that the links to health and wage earnings is not represented by a simple linear relationship or the wage earnings data suffers from measurement errors. Without control on the data generating process, the completeness of the earnings data cannot be verified. This supports the argument that consumption expenditure is a closer approximation of income in developing countries where various income sources are often not declared accurately. In the following chapter, I examine this issue further on a household level. The same issue also applies to out-of-pocket health payments captured on an individual basis. Therefore, using household data on health spending and consumption expenditure (our measure of economic vulnerability) may be more appropriate.

The finding from the NGHPS suggests that it is important to control for gender in this study. Wage income levels were different for men and women. Wage income was positively related to

gender, even though older men and women work similar workdays in the NGHPS. Although, it would seem that older men have higher wage income levels than women, it would be wrong to conclude that women are more disadvantaged. As I mentioned above, wage income in the NGHPS may be prone to errors, and this is further confirmed by the counter-intuitive evidence found in the NGHPS, that more elderly man consider housework duties to be a barrier to labour force participation. This is in contrast to sociological findings on gender assignment of housework in African farming systems as can be found in Nigeria (Boserup et al., 2007). The NGHPS reveals that both older men and women participated in housewife duties of collecting firewood and fetching water, but men spent more time doing this activity than women. These time differences in doing housework were not statistically significant. This inconclusive evidence raises questions about how best that data in the NGHPS reveals any gender differences in respect of paid and unpaid labour.

Another weakness of the NGHPS, which is relevant for understanding the needs of elderly people in regards to work, is that it is impossible to ascertain, the exact exit or re-entry points into the labour force for elderly people who worked in the formal sector, upon attaining official retirement age. Quantitative surveys, like the NGHPS, have been known to be limited in qualitative understandings of the motivations of older people in relation to work and how they perceive their economic welfare within the Nigerian society. Given the Nigerian context, high levels of poverty and lack of social security mechanisms in Nigeria mean that old-age labour force participation is likely to be for survival and to earn a wage income. The NGHPS is very limited in scope in addressing this type of questions. I reflect further on these knowledge gaps in the concluding chapter of this thesis. The main point here is that, the wage earnings of elderly individuals, examined in isolation, is likely to be a poor indicator of economic wellbeing for older people.

It is fitting of the Nigerian context to assume that a proportion or all of older people's income resources go into a household pool. The most suitable sharing formula remains a source of contention in the literature. This chapter examined intrahousehold consumption allocations using the NGHPS and its findings suggest that ignoring economies and equivalence scales are methodologically sound in the context of this study. The NGHPS does not allow a demographic separation of consumption allocations between younger adults and older adults; although it was possible to do some for children and adults following Deaton's OER approach (see Deaton, 1989). Urban Elderly Nigerians contribute economically to their households; still, knowledge gaps remain, which the NGHPS 2010 is not suitable to explore at this time.

Notwithstanding these limitations of the NGHPS data, the NGHPS remains the most recent secondary dataset on individuals and households in Nigeria. The methods and procedures

summarised in this chapter underpin the care that has been taken in ensuring that the data is well-suited to address the research questions of the study. In addition, the chapter has demonstrated that the analytical processes adopted in this thesis are based on well-tested foundations.

In the next chapter, I further contemplate the role of age and gender as explanatory variables at the household-level, primarily to identify underlying determinants of economic vulnerability using consumption allocation. I also examine alternative welfare measures as dependent variables, besides consumption allocation.

5. The Underlying Determinants of Economic Vulnerability: Descriptive Statistics from the NGHPS

This chapter acts as a precursor to addressing the study's first research question in Chapter 6. The analysis is primarily at the household-level. In the previous chapter, I discussed the importance of examining economic vulnerability among elderly Nigerians on a household level. In Chapter 2, I also discussed the view held by some scholars economic vulnerability can be operationalised differently from poverty. In this theoretical scenario, poverty could play a role as a determinant, if it is not proxied by consumption. In practice, authors such as Appleton have shown, consumption can also determine poverty directly. In light of this, using the NGHPS, I test for this relationship in Section 5.2.

In this chapter, I also examine other basic and underlying determinants of economic vulnerability besides those that have already been discussed previously. These other underlying determinants are typically at the household-level in the NGHPS, and include: living arrangements and home ownership. Generally, conventional indicators of living arrangements are—household size and household composition. From a cultural context, these underlying household characteristics are important for the Nigerian elderly. Some African gerontological studies have pointed out that , prior to migration and urbanisation, African communities were characterised by well-established caring structures which helped ensure the quality of life of elderly people (Apt, 2002;Aboderin, 2011;Kodzi et al., 2011). These authors argue that the breakdown of this close-knit structure has destabilising effects on how elderly people are perceived in modern times. Although, my thesis is not focused on understanding caregiving structures and exchange of resources per se, it cannot be disputed that household living arrangements can affect older people's access to household resources.

In chapter 2, the literature highlighted the role of assets in understanding economic vulnerability (Moser, 1998;Lloyd-Sherlock, 2006). One good example of an asset is, home ownership. Given the Nigerian context, where savings and investment are still remarkably low, home ownership is often viewed by older people themselves as a source of income-related wellbeing in old age (Adisa et al., 2008). In addition, the role of poverty as a determinant of economic vulnerability is examined at the household level. To examine the underlying determinants of economic vulnerability among urban elderly households, I mostly use cross-tabulations and bivariate regressions based on household level data. I also make comparisons based urban elderly households and non-elderly households in this chapter.

This chapter draws solely on data from the 2010 Nigerian General Household Panel Survey (NGHPS). As I highlighted in Chapter 4, each database of household rosters on 14 categories – including information about the age, sex, education level, residence, relationship to head of household, other household members, economic activities, and self-reported levels of health. Information on assets, consumption expenditure, wage income, and rental income were collected on a household level in two separate rounds. For the analysis, I use the urban elderly sample for 799 households (UE), and for comparison purposes, I used an urban sample of 813 non-elderly households (NE). As I have established an old-age starting point in Chapter 4, urban elderly households have been defined as households containing at least one elderly person ≥ 50 years old. Conversely, non-elderly households are those that have no elderly person residing in the household. I now turn to the descriptive analysis, in which some interesting findings emerge.

5.1.1   Household Size and Household Structure

Household sizes are likely to have an implication for household welfare. Household structures are indicative of economising behaviour amongst urban elderly households. For instance, households with elderly people are likely to benefit from unpaid care given to grandchildren by their grandparents. On the other hand, living in larger households, made up of working age adults, may also be beneficial for elderly people, especially those in advanced ages who are unable to work but who may benefit from informal caregiving in households with more women[35]. Similarly, living alone as an elderly person may have its own advantages and disadvantages, which have an implication for wellbeing, and raises questions about the role of household structures as a possible determinant of economic vulnerability among urban elderly Nigerians.

In Chapter 4, I presented evidence from the NGHPS that some elderly offer caregiving duties to other household members in the form of unpaid labour. It is impossible to estimate the value of these economic transfers as the NGHPS does not contain information on time allocations within the household. But, it emphasises the fact that having children or grandchildren could create such economic transfers which is likely to benefit some households more than others. Living arrangements therefore, play an important part in understanding economic vulnerability among urban elderly households. As I further mentioned in Chapter 4, this thesis solely assumes a

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[35]There is a vast literature on caregiving and intrahousehold resource allocations using bargaining models. For example, (see Pezzin, L. E. & Schone, B. S. 1999. Intergenerational household formation, female labor supply and informal caregiving: A bargaining approach. *Journal of Human Resources*, 475-503.; and Pezzin, L. E., Pollak, R. A. & Schone, B. S. 2007. Efficiency in family bargaining: Living arrangements and caregiving decisions of adult children and disabled elderly parents. *CESifo Economic Studies,* 53, 69-96.

unitary model and ignores intrahousehold decision-making. The rationale for this decision has been extensively discussed in Chapter 4.

Table 5-1 Percentage distribution of elderly and non-elderly urban household heads by household size

Household Size	Elderly	Non-elderly
1	11.64	12.79
2	11.39	7.50
3	11.26	12.92
4	11.64	16.36
5	12.02	16.36
6	12.14	13.78
7	10.51	8.86
8	6.38	4.43
9	4.26	2.09
10 and above	8.76	4.92
Total	100.00	100.00
Note: All figures are in percentages		
Source: NGHPS 2010		

Compared to non-elderly households, 11% of elderly households have a two-headed household structure, compared to 7.50% among non-elderly households. The households may be made up of a head of household and a spouse, when the children have left home, a head of household and adult child, or a head of a household and grandchild. Table 5-1 reveals that all three scenarios are likely, although the most common household structure is the 'multiple household' structure.

Table 5-2 Urban Elderly household structure, 2010

Household Generational classifications	Percentage
One generation (head person only)/ One or two generation (Elderly head and spouse)	22.90
Three generational households: (Man, Wife, adult child)/ Man, Wife, adult child, grandchild	8.13
Multiple/Extended households	68.97
Total	100.0
Note: All figures are in percentages	
Source: NGHPS 2010	

Of the three living arrangements, the most financially demanding on elderly heads is the last one, as it implies that the elderly person is likely to be the main caregiver of the grandchild due to the death of an adult child, in the absence of social security arrangements (Orbach, 2007;Zimmer and Dayton, 2003;UNFPA and HAI, 2012). In all indications, household size differs somewhat amongst urban elderly households. I examine household size, household structure, and composition for urban elderly households in 2010 by exploiting the NGHPS.

Table 5-3 presents summary statistics of household size and household composition. Mean household size was significantly higher in elderly households than in non-elderly households, suggesting that households may be economising by forming multigenerational HHS. Average

household size for non-elderly households and elderly households was 4.67 and 5.13 respectively. This finding is consistent with Bongaarts's (2001) study on living arrangements in urban areas in developing countries, which found an average household size of 5.30. It further verifies the representativeness of the NGHPS data. I draw on historical data in the NLSS 2004 to compare household sizes. I found a consistent pattern in household sizes for elderly households in both survey periods. The six-year differences between both surveys may be too small to reveal significant differences in household size patterns.

Table 5-3 Household size and composition of elderly households in 2004 and 2010, and non-elderly households in 2010, Urban Nigeria

Year	Elderly 2010				Elderly 2004				Non-elderly 2010			
Measures	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Household Size	5.13	3.09	1.0	22	5.14	3.37	1.0	26	4.67	2.54	1.0	15
Elderly aged 50+	1.34	0.54	1.0	4	1.31	0.53	1.0	5	0.00	0.00	0.0	0
Working age adults	2.27	1.99	0.0	16	2.25	2.09	0.0	13	2.33	1.08	1.0	7
Child (0 to 14)	1.51	1.86	0.0	15	1.59	1.96	0.0	16	2.35	1.93	0.0	9
N	799				2061				813			

Source: NGHPS 2010 and NLSS 2003/2004

Relevant to the discussion is the degree to which these living arrangements may influence the economic vulnerability of urban elderly households. As I earlier noted, household size effects can have economising advantages. Shared household arrangements can create positive benefits for the household. Conversely, it may also increase the strain on resources in very poor households. For instance, in a study of Nigerian households, Omonona (2010) finds that the larger the family size, the poorer the household. Mberu (2007) revealed that there is a strong correlation between household structure and living conditions in Nigeria. According to Deaton and Paxson (1998a), this large welfare increases can also result from economies of scale associated with increasing household size and resource expansion. Viewed in this way, large households engage in some type of beneficial economising behaviour that produces economies of scale advantages. This body of evidence suggests that household size is likely to be an underlying determinant of economic vulnerability.

5.1.2 Household Structure and Household Income

The importance of income in household welfare studies is undisputed. As a welfare measure, it can help to identify if elderly households compared to non-elderly households differ in terms of spending power. It indicates a household's ability to control and access resources. In the next section, I use a derived household income variable, derived by adding all the sources of income captured in the NGHPS (see Chapter 4).

In addition, household structure play a key role in understanding the economic welfare of elderly households in the empirical literature (Case and Deaton, 1996). According to Deaton (1995), household units may break out of the larger family into a nuclear structure and re-unite during times of difficulties. This pattern noted by Deaton is likely to create more complex household structures. Although I cannot ascertain when these decisions on household structure choices are made on a household level, one can examine whether it matters for household income by examining different structures which do not only assume a relationship by marriage and blood alone, but are based on generations.

Table 5-4 Bivariate regressions of total household income of urban elderly households, by gender

DV= total household income Household Structure	β	SE
One generation	-48740.373*	(20162.750)
Two generation	-42243.580*	(20447.261)
Three generation	-40826.453	(43020.724)
Four generation	-51754.995	(27308.986)
Five+ generations	13869.509	(50394.216)

Note: Standard errors in parentheses. All figures are in Nigerian Naira.
* p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

There is a negative relationship between household structure and income. More complex structures of five generations and over have a positive relationship with income, although this is insignificant. Simpler household structures of between one to two generations are negatively related to income and are significant. Very weak support is found that more complex household structures may have a more positive effect on household income, compared to simpler household structures. There are probably other explanations for the household living standards besides household structures. Without information on how these households self-organise into household structures, it is difficult to infer the nature of these income disadvantages for one or

two generational households. Nonetheless, I investigate this as a basic determinant of economic vulnerability in Chapter 6 for consistency.

5.1.3   Household Income and Household Composition

From Table 5-5, the number of working-age adults has a positively significant relationship with household income per capita. The household composition effects suggest that those households with more elderly and children are likely to have less wage income overall, compared to elderly households with more working age adults.

Table 5-5 Bivariate regression of total household income per capita by household composition, urban elderly households

DV= total household income per capita		
Household composition:	β	SE
Number of elderly (50 years and above)	4703.804	(11977.987)
Number of working age adults (15-49)	8654.102**	(3323.880)
Number of children (0 to 14 years)	6122.483	(3575.503)

Note: Standard errors in parentheses. All figures are in Nigerian Naira.

* p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%

Source: NGHPS 2010

Household composition is clearly important. Given the prominence of agriculture in Nigeria and its requirement for human labour, does household composition affect the likelihood of participating in farm work? Household composition can affect income generation opportunities in elderly households. For instance, having more infant children may mean less labour supply, hence less household income. On the other hand, some older workers who are ill and frail may be marginalised and may not be productive to contribute to labour supply. These scenarios could influence household incomes negatively.

From Chapter 4, I found that that some elderly are able to remain in work, while others face various barriers to work. Based on this study's findings in the earlier section, I focus on urban agriculture because is the most prevalent occupation among elderly households in urban Nigeria. Drawing on the NGHPS data, farm labour supply is correlated with household compositional variables - the number of elderly, number of children, and number of working age adults are key correlates.

Table 5-6 reveals that the number of children in the household had a significant negative effect on participating in farm work, suggesting that households with more children will have less

labour supply. Having an additional elder person is associated with a decrease in labour supply. One feasible explanation is that they may be diverting productive labour resources towards providing care for other household members or they are infirmed and simply cannot work (see Chapter 5). Working-age adults were positively related to labour supply, although this was not significant.

Table 5-6 Bivariate regression estimates of household composition on farm labour supply of urban elderly households, Nigeria 2010

Household composition:	β	SE
Number of elderly (50 years and above)	-0.044	(0.033)
Number of working age adults (15-49)	0.001	(0.009)
Number of children (0 to 14 years)	-0.020*	(0.010)

Note: Standard errors in parentheses

* $p < 0.05$ indicates significance at the 5% level; ** $p < 0.01$ at the 1% level; at *** $p < 0.001$ at the 0.1%

Source: NGHPS 2010

In summary, based on the bivariate regression analysis, household size and composition, age, and gender are all important for household income earnings.

5.1.4 Home Ownership and Economic Vulnerability

Home ownership is useful in understanding the economic standing of elderly households in urban Nigeria. The NGHPS provides useful information on housing tenure choices of households in Nigeria, which is collected in the second round of the survey. The questionnaire asks the respondent whether he or she owns a home, has free housing (employer provided), has free unauthorised housing (slums), or is renting.

Property ownership has a productivity function. Theoretically, households can use income from property ownership to supplement income (Deaton, 1992), and it acts as a buffer stock during crisis (Agarwal, 1994;Doling and Ronald, 2010;Naschold, 2012). Some studies in developing countries have stressed the importance of home ownership among poor due to its impacts on household production and consumption decisions.

Doss (2006), using data from the Ghana Living Standards Surveys, found that share of assets owned by women affected household expenditure patterns within households. Caroline Moser's (1998) study in four urban communities of Ecuador, Zambia, Philippines, and Hungary reported that assets play a consumption smoothing role, delaying economic vulnerability in times of temporary or persistent hardship (Moser, 1998). Although the author utilises a very detailed asset-vulnerability framework, taking a solely asset-based approach to examine economic vulnerability has been criticised in the literature. Some critics argue that poor people may find it difficult to accumulate assets in developing countries, creating an identification problem. Lloyd-Sherlock (2006) applied Moser's asset-vulnerability framework in Thailand and found it to be very data-demanding. It is not uncommon in the African setting for the home to be utilised for income-generation activities. For example, using survey data in Kumasi, Ghana, Sinai (1998) found that urban households with female household heads and older but less educated heads were more likely to use their homes for such informal sector activities. Another study on Ghana by Sackey (2004), using data from the 1998–99 Ghana Living Standards Survey, found that assets were negatively associated with the risk of poverty in Ghanaian households.

Owning one's home can be an important safety net for elderly people in urban Nigeria, especially with housing shortages in the urban areas of Nigeria. Two empirical studies on elderly people in Nigeria found that the elderly had a high preference for home ownership because they have to rely on irregular sources of support (Adisa et al., 2008; Nkoya et al., 2010). In addition, in Chapter 2, I discussed the part of the vulnerability literature which

documents the importance of assets for economically vulnerable groups in developing countries (Naschold, 2012;Moser, 1998;Lloyd-Sherlock, 2006).

Household assets (home ownership) can affect economic vulnerability. While the associations of home ownership on improved welfare among households have been subject to many theoretical and empirical debates in developed countries (Forrest (2011); Burrows (2003), it is relatively un-researched in developing countries. Doling and Ronald (2010) suggested that the increased emphasis on the role of assets in reducing poverty in Western welfare states was as a result of the shift from state-managed social transfers to individual responsibility, thereby reducing income poverty through investing in property assets.

From an African perspective, property assets can directly influence elderly household income as retirees can use them through receiving rental income or through the sale of the property asset to support consumption when income sources are reduced. The penchant for using a home for income-generation activities has been well-documented.

In Sierra Leone, Fagernäs and Wallace (2007), using data from the Household Income and Expenditure Survey (HIES), found counter-intuitive evidence: there was no clear link between home ownership and poverty. The authors attribute their finding to more urban households utilising rented accommodations rather than owing their own homes.

With these reasons in mind, it is therefore not surprising that in Nigeria, elderly people place a huge emphasis on home ownership. Two studies on elderly Nigerians testify that asset ownership is crucial for the elderly in Nigeria because they have to rely on irregular sources of support (for example, retirement income) and seasonal gifts from children (Adisa et al., 2008; Nkoya et al., 2010). Adisa et al. (2008) revealed that home ownership ranked highest in the preferences of retirees in the Southwestern part of Nigeria. It is generally agreed that when state-managed social transfers or social security schemes are non-existent, individuals are more likely to take greater responsibility for their own welfare by investing in property assets that will appreciate in value over time or at the very least be used as a source of income via rents or to reduce high levels of housing expenditure (Deaton 1991; Doling and Roland 2009).

Rental income may affect the consumption of goods and services. In the next section, I examine the effects of rental income on economic vulnerability. In this case, I utilise consumption per capita as the dependent variable. As I have done in previous sections, the descriptive analysis begins with bivariate regressions analysis and correlations to understand the links between economic vulnerability and home ownership.

5.2   Household Poverty and Consumption Allocation

Assessing economic vulnerability amongst the elderly almost always begins with an examination of poverty levels (Heslop and Gorman, 2002; Ogwumike and Aboderin, 2005; Lloyd Sherlock, 2010). The main assertion from this literature is that when resources are limited, it has devastating consequences for the economic welfare of elderly people and their households. The main idea here is that if urban elderly Nigerians are already poor, it then follows that these households are likely to have very low consumption allocations which would make them even more economically vulnerable. This is the related link between poverty and economic vulnerability that Dercon (2001) was referring to in his study (Chapter 2). Therefore, it becomes important to examine how strongly related poverty measures are to consumption allocation, our main welfare measure in this thesis.

Given what is known about how poverty measures are typically derived from consumption expenditure, as I discussed in Chapter 2, it would be prudent to test whether consumption allocation (our proxy measure of economic vulnerability) is strongly endogenous to poverty. As I have shown in Chapter 2 and 4, there is a strong justification for using consumption per capita due to its representativeness of household living standards in developing countries. I now go on to conduct this simple test by using two poverty measures following the conventional approaches in the literature: two-thirds of mean per capita and expenditure, which is the official defined poverty head count level in Nigeria; and for international comparisons, I utilised the World Bank's $1.25 dollar per day poverty line. The two poverty category variables are then correlated with consumption per capita.

Table 5-7 below shows that both measures of poverty are highly and positively correlated with consumption allocation. This finding can be interpreted in two ways: One, consumption allocation is a strong welfare measure as confirmed by the various studies in my review in Chapter 2; and Two, it is reasonable to expect that there would be a high level of endogeneity if these poverty measures are included directly in the model. Without readily available proxies and instruments for poverty measures, it would be prudent to exclude poverty categories to control for existing poverty among urban elderly Nigerians.

Table 5-7 Pearson Correlation of Poverty Measures and Consumption Per Capita

Consumption Per Capita	Poverty Line (PL1) (World Bank @ $1.25 per day)	Poverty Line (PL2) (2/3 of mean total expenditure)
1.000	0.7527	0.5972

Source: NGHPS 2010

5.3 Age of Household Head and Economic Vulnerability: Descriptive Statistics

So far, I have identified household size and composition as underlying determinants. In this section, I explore one important potential determinant for economic vulnerability, which is age of the household head. The importance of age in household welfare models finds its origins in the well-known consumption smoothing curve in the economics literature. The LCH was proposed by Ando and Modigliani (1963). The theory posits that individuals will keep consumption levels constant by saving during the most productive years and dissaving during retirement. These models have been influential in economics and have been well debated. Although, the notion of high savings is likely to not apply to the Nigerian context, as many Nigerians are living from 'hand-to-mouth' on a daily basis and savings and access to credit markets are low (Banerjee and Duflo, 2007). This characteristic has also been earlier confirmed by the NGHPS.

Also, I have already established that elderly Nigerians remain in the labour force beyond the conventional retirement ages to earn a living, further implying that are any dissaving that may be occurring is likely to be too low to allow daily survival or they may simply prefer to work rather than not work. I am limited by the data to verify these aspects. While it is also impossible to present the age-consumption profiles of urban elderly Nigerians over time, given available data, the NGHPS allows an examination of the relationship between age-groups and consumption allocation.

Table 5-8 presents consumption per capita for elderly households by age categories. Household consumption increases with age among urban elderly households. Consumption per capita decreases from the age of 90 years and older. The age differences in income levels are also significant at the 1% significance level. There is some evidence that income is actually rising with age and not decreasing at older ages. Income drops drastically at very advanced ages of 90 years and above, suggesting that those in advanced ages have very low consumption levels. As these are based on average values, a more rigorous empirical approach is required to make

stronger inferences on the relationship between age of the household head and consumption allocation (Chapter 6).

Table 5-8 Consumption per capita, by 10-year age category, in Nigerian Naira, 2010

Age categories***	Mean	SD	Min	Max
50-59	103107.16	118022.87	4519.0	845755
60-69	119164.59	159627.43	4046.3	1207305
70-79	138325.19	131937.90	12524.6	793345
80-89	208955.26	264415.00	7222.0	1354824
90+	46788.77	44247.01	4597.3	127375
Total	121333.93	150908.04	4046.3	1354824

SD-Standard Deviation. All figures are in Naira. Note: * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

The analysis may be sensitive to the age categorisation so I use a 4-year age category to examine the changes at much more advanced ages. Table 5-9 reveals a statistically significant relationship between age and income levels (Kwallis chi-square = 26.454, p = 0.0001), and I find that average consumption per capita actually seems to increase with age.

Table 5-9 Consumption per capita, by 4-year age category, in Nigerian Naira, 2010

Age categories***	Mean	SD	Min	Max
50-54	102915.19	114044.37	7221.1	680768
55-59	103406.47	124432.07	4519.0	845755
60-64	111763.15	155157.89	4550.0	1076196
65-69	131864.77	167156.64	4046.3	1207305
70-74	120965.52	100536.00	12524.6	474453
75+	179100.02	217925.33	4597.3	1354824
Total	121333.93	150908.04	4046.3	1354824

All figures are in Naira. SD-Standard Deviation. Note: * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

Those at the extreme in the age distribution (50-59 and 90+) may be more sensitive to economic vulnerability. I explored the relationship with economic vulnerability using bivariate regressions, and I found that in 2010, increases in age is strongly correlated to consumption per capita. This finding provides a justification for the inclusion of age of the household head as a potential determinant in the empirical model in the next chapter.

5.4   Conclusions

In summary, this chapter has discussed household-level determinants that can influence economic vulnerability through consumption allocations, amongst elderly households. I have drawn on another survey to provide a historical comparison. I have also made useful comparisons to non-elderly households. Through a simple test, consumption allocation is highly correlated to poverty measures, suggesting that our chosen welfare measure is likely to be a good approximation of similar economic welfare measures. This further confirms that suitability of consumption allocation in identifying determinants of economic vulnerability in the subsequent chapter.

It is clear that there are likely to be other observable or unobservable factors influencing economic vulnerability. Therefore, In Chapter 6, I will propose an estimable consumption allocation model, taking into consideration the theoretical and empirical literature, as well as this study's preliminary findings in this chapter, and in Chapter 2.

With respect to urban household heads, 82% have received education through primary and secondary schools, and 6% are illiterate or semi-illiterate. The National Bureau of Statistics in Nigeria's National Literacy Survey (2010) estimates the national adult literacy rate as 50.6 percent. In 2013, adult literacy rates in SSA was 59% (UNESCO, 2013). Using primary education as a yardstick, urban elderly household heads in the sample have a higher literacy rate of 31.4 and 23 percentage points above the country and SSA average respectively. As in the individual level analysis in Chapter 4, education on a higher level (B.Sc and above) is minimal. Only 12% of urban elderly household heads have completed at least a bachelor's degree. These educational differences are significant. The educational differences in income for those at a higher level are rather significant in comparison to the less educated categories ($p<0.05$). Higher education is likely to be a good predictor of economic vulnerability in Nigeria.

There are significant income differences among the occupational classifications. As one would expect, elderly household heads in professional and agricultural occupations have higher levels of household income compared to the other groups. Those in technical occupations have the lowest household income. These differences are statistically significant ($p<0.001$) and are in line with findings in the literature on the effects of occupations on economic welfare. The 'other classifications' comprise of occupations that are not easily classified. This category has the highest income of the group, but without knowing the specific classification, I cannot infer what these classifications are.

There are suggestions that households in urban settings are becoming more nuclear. With the availability of time-series data in the future, one may be able to examine whether household size is changing over time.

In addition, almost 76% of elderly households own their homes. Elderly people place a huge emphasis on home ownership (Adisa et al., 2008). Contrary to the finding in Sierra Leone, more urban elderly households in Nigeria own their homes, while only 9% rent and 15% have free housing either from employers or through unauthorised means. Although the study on Sierra Leone focuses on all households, a different finding may be seen when the household are only elderly households. Elderly people are more likely to have accumulated savings to purchase their homes in comparison to other households. This may be one indication that having an elderly person within the household may be positive for all household members because they contribute hidden benefits to the household. This role of housing tenure needs to be further examined empirically. Chapter 6 incorporates the different housing tenure choices in the model of economic vulnerability. Other underlying determinants such as household size, household structure, education, occupation, age, and gender are also investigated in an econometric model in the next chapter to fully identify the determinants of economic vulnerability.

6. Determinants of Economic Vulnerability: Empirical Analysis

The findings from Chapter 4 and 5 will guide some of the assumptions and expectations of the role of socio-economic determinants in our consumption model in the first of the main empirical chapter of the thesis. In other cases, guidance is sought from the relevant theoretical and empirical literature. For instance, I have found consistent evidence that some urban elderly Nigerians are economically active and continue to work beyond the standard retirement ages of 60 or 65 years in urban Nigeria. In addition, education and occupation as variables are likely to influence consumption allocation which may explain why some urban elderly households are likely to be more economically vulnerable than others.

In this chapter, the main dependent variable is consumption allocation (in per capita terms). I have also identified that some demographic factors could potentially determine economic vulnerability such as age, sex, region or location, home ownership, household size, and household composition. In previous chapters, I have relied greatly on tabulated data and the use of bivariate regressions and correlations. In most cases, I examined the role of a single variable of interest on Consumption per capita. Earlier in Section 5.2, I confirmed the strength of the consumption allocation measure as a welfare measure of economic vulnerability, based on its close approximation to two estimated poverty measures.

In this chapter, the main consideration here is to examine the correlational relationship that these underlying determinants may have on consumption allocations, holding all other factors constant. I also did not consider the causal relationships between explanatory variables and the dependent variable. In this chapter, the objective is to identify the determinants of consumption, so that one can make inferences about the factors that may affect economic vulnerability. By so doing, the first main research question of the thesis can be addressed: **Do demographic and socio-economic factors influence economic vulnerability through consumption?**

6.1 Methodology

For the empirical analysis in this chapter, I rely on the NGHPS for the consumption expenditure data. In Chapter 2, I discussed the strengths of using household consumption expenditure in household welfare studies in developing countries including the Nigeria. In Chapter 4, I highlighted some of the limitations in using an aggregate indicator to study older people individually. The consensus suggests that consumption expenditure as a better measure rather than income. Additionally, as consumption expenditure is the main economic dimension of welfare used in poverty documents published by Nigerian Government, I adopt the same approach here.

In this section, I discuss this study's empirical methodology and econometric model specifications. The NGHPS data contains data on all the explanatory variables. I have extensively discussed the survey in Chapter 4. I examine the relationship between the socio-economic characteristics of elderly households and economic vulnerability. In line with convention in household welfare analysis studies, I estimate the determinants of economic vulnerability using an OLS (ordinary least squares) regression model. Economic vulnerability is proxied by a consumption per capita measure. It is a continuous variable and represents total expenditure, after adjusting for household size.

In this chapter, I specify a reduced form econometric model of vulnerability to identify the determinants of economic vulnerability, using consumption allocation as the welfare measure. A simple OLS and quantile regression is used to estimate the model to capture the key relationships between consumption allocation and selected determinants.

6.1.1   Quantile and OLS Regressions

Researchers have seldom used quantile regressions as an alternative to OLS in many settings, and was first introduced by Koenker and Bassett Jr (1978). Quantile regressions can provide useful insights about sub-populations which can be compared to OLS results.

The main difference between an OLS regression and a quantile regression lies is that the former estimates the relationship between the conditional mean of the dependent variable and the independent variables, while a quantile regression follows a least absolute deviation method to fit a line through a pre-specified series of percentiles of the dependent variable, rather than simply through the conditional means of the dependent variable.

The standard notation for the OLS minimand is: $\sum_i (y_i - x_i\beta)^2$, while the notation for the Quantile regression minimand can be expressed as: $\sum_i \rho\theta(y_i - x_i\beta)$, where θ is a specified percentile, and $\rho\theta$ is a linear function for any specified quantile between $0 < \theta < 1$.

One advantage of the quantile regression is that it retains its robustness even when the assumptions of a normal distribution are violated (Koenker and Bilias, 2002). Intuitively, and like the OLS, it also ignores data points that are above or below the regression line, but, its departure from the OLS lies in that it chooses θ and $(1-\theta)$ to produce a line for a given conditional quantile or median. See Koenker and Hallock (2001) for more details.

To my knowledge, I am not aware of any studies that use quantile regressions to examine the determinants of economic vulnerability, using a cross-sectional survey sample. I estimate median regressions (or quantile regressions) to check the consistency of this study's results, and

I present the results later on in the section. Following convention, in both regressions, I calculated robust standard errors to correct for heteroscedasticity and perform robustness checks.

6.1.2 Robustness Tests

Simple correlations and an internal coefficient of determination are estimated to confirm no-near exact linear dependence amongst the regressors- a very important statistical assumption for linear regression analysis. In line with the empirical literature, existing theory and empirical evidence are this study's main guides in the inclusion of any variable in the model above. I also examine the changes on R^2 and changes in the coefficients of other explanatory variables to identify the usefulness of including a variable.

I ran the usual robustness tests for consistency. I estimated heteroscedastic-consistent errors [SSE/ (N-k)], mis-specification tests of the distributional hypothesis (y-Xβ), and $\varepsilon \sim N$ (0, σ2) for this study's model. I investigate the functional form of the hypothesised relationships with a Box-Cox transformational analysis (Box-Cox, 1964). A mis-specification test is also undertaken using the Ramsey RESET Test. The Box-Cox analysis is explained more in-depth in later sections of the chapter. In the next section, I go on to discuss the empirical model.

6.1.3 Modelling Consumption Expenditure

Household welfare theory typically assumes that a household's main objective is to maximise utility subject to a budget constraint. Consumption expenditure is a function of economic resources and tastes and preferences of the utility optimising unit (Haddad et al., 1997). Utility is an unobservable term that would need to be made observable by a measure. The common approach in microeconomics is to assume duality, so that the household's decisions to maximise utility can be expressed as expenditure functions[36]. I adapt this approach and assert that economic vulnerability (EV) is a function of certain underlying determinants at the household and individual level. Some examples are age, sex, location, household size, and so forth. Each elderly household has an EV status that indicates whether or not the household is economically vulnerable at a certain utility level, *U*. This study's model is a reduced form similar to that of Deaton and Muelbauer (1980, p.194), where only household composition variables enter into the equation, ignoring prices. The rationale for ignoring prices is based on the assumption that utility comes solely from consumption of goods and services, on a household level. Prices for leisure are also ignored in such reduced form models.

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[36] See Deaton and Muelbauer (1980, p194) for a comprehensive discussion on the household welfare theory and proof of how they derive their reduced form.

This study's equation can be expressed as a function of the underlying socio-economic factors:

Consumption per capita $= f\,(U_h;\, I_i,\, H_h)$,   (1)

where I_i is a set of possible socio-economic and socio-demographic indicators at the individual level and H_h is a set of determinants, expressed at the household level. Economic vulnerability is quantified by consumption per capita (see Chapter 4 and 5).

Ii comprises of age, gender, education, occupation, and marital status of the elderly household head. These aspects capture the human capital stock of elderly household heads, and they can be expressed as Ii = (*Age, Gender, Marital Status, Occupation, and Education*). This study's inclusion of these variables has been guided by its preliminary analysis in the previous chapters and by the theoretical and empirical literature. I briefly discuss these variables in the following paragraphs.

Housing Tenure Choice and Home Ownership

Productive assets are considered to be good indicators of a family's socioeconomic status and are deterministic of the wellbeing of elderly people (Moser, 1998); Lloyd-Sherlock (2006). In Section 5.2, I found counterintuitive evidence, that rental income was weakly related to household consumption per capita. I found that other tenure choices seemed to have higher levels of consumption per capita compared to home owners, suggesting that this level of alternative income may still be lower than other types of housing opportunities; for example, in the case of employer-provided housing, the household enjoys free accommodations and can direct saved costs into consumption. On the other hand, those who own their homes are also likely to invest in the maintenance of their homes, which may erode rental income.

In light of this, it would seem that the housing tenure choice may be more important than rental income itself in an urban area. Given the evidence provided by Ndubueze (2009) regarding the housing affordability problem in Nigeria, which I discussed in Chapter 3, it is reasonable to assume that enjoying free housing may be more welfare-improving than owning a home to generate income.

The NGHPS (2010) contains information on the households who own their homes and other types of housing tenure choices, enabling me to formally test this hypothesis empirically. I may find a positive or negative relationship with consumption allocation. Therefore, housing tenure choices are included as regressors in the consumption model, R_1. In the literature, the convention is to use dummies or the value of the home as an explanatory variable. Without housing price data, it is rather difficult to use the latter approach.

Gender

In earlier chapters, I highlighted the role that gender could play in explaining why some elderly households with a female head may be more or less economically vulnerable than their male elderly head counterparts. The inclusion of gender as a variable also has the advantage of reducing the risk of omitted variable bias. I discuss the issue of omitted variable bias in relation to the consumption model, later on in the chapter.

Quisumbing et al. (2001) analysed gender poverty in ten developing countries (six Sub-Saharan African countries, three Asian countries, and one Latin American country). Using a collection of household surveys, they estimated Foster-Greer-Thorbecke poverty measures and stochastic dominance analysis. In 8 out of 10 cases, insignificant gender differences in poverty were found.

Given the mixed evidence, it would be interesting to see whether gender affects economic vulnerability of urban elderly Nigerians after controlling for other household characteristics. I now turn to this study's set of household-level indicators. $\mathbf{H_h}$ comprises of household size, household composition, region, and housing tenure choice.

Region

Where elderly people reside within urban areas in Nigeria is important. Given the disparities in human development indices across the regions of Nigeria, regional location is likely to be a key driver of economic vulnerability, even within groups of elderly households.

The evidence from the literature, coupled with this study's findings in Chapter 3 strongly suggest that there are significant disparities in household living standards across the regions of Nigeria, and these regional differences would need to be controlled for. I created six dummies accordingly as a control in this study's model. Since it is generally agreed that the Southwestern part of the country is wealthier (Okojie, 2002;Appleton et al., 2008), I use the Southwest as this study's reference dummy.

Marital status, Household Size, and Household Composition

So far in the thesis, marital status is one that has not been considered to be very important, due to the study's assumption of a unitary model. However, in order to ensure a correctly specified model, marital status is a variable that needs to be controlled for. The underlying theory of marriage was developed by Becker (Becker, 1973, 1974) and has formed the theoretical framework of many empirical studies on the family development. According to Becker, women will choose to marry if there are welfare benefits compared to being unmarried, and the

possibility of being married decreases if there are no perceived welfare benefits to marriage. Becker's model has greatly influenced labour supply decision-making and bargaining power studies (Doss, 2013). Additionally, Becker's theory of marriage posits that people who are married are better off than those who are single due to the specialisation advantages that marriage brings (Becker, 1973, pp. 813-814).

Regrettably, for elderly people in SSA, I was only able to find one study that examined the links of being married to welfare. Using data from the 2001 Census and the South African Labour Force, Lam et al. (2006) found that marital status had differential effects on labour force participation among South African elderly 50-75 years old. They found that unmarried elderly women were more likely to work, with the largest effect being from divorced elderly women. Married elderly men, on the other hand were found to have the highest probabilities of employment compared to divorced, widowed, or never married men—married elderly men had probabilities of at least 10 percentage points higher. This evidence suggests that being married may carry some advantages; but, it does not tell much in terms of its effect on household welfare, but as I noted before, labour force participation does not guarantee economic welfare. Therefore, marital status is a useful variable to include in the model. In the NGHPS, marital status consists of five categories: married, separated, divorced, widowed, and never married.

It would be difficult to link marital status directly to the prominence of multigenerational households among urban elderly households as it is possible to have other family structures, as I discussed in Chapter 4 and Chapter 6. The multi-generational household typically comprises of an elderly head, adult children, and grandchildren. This finding is line with the living arrangements of older people in much of SSA (Zimmer and Dayton, 2005, 2003).

In Chapter 5, household size has been found to be an immediate determinant of economic vulnerability. I have extensively discussed the role of family size on household economic welfare in Nigeria. The implication that larger households are more at risk of poverty has generated a huge debate in the scale economies literature over the years Deaton and Paxson (1998a);(Lanjouw and Ravallion, 1995); Strauss, Mwabu, and Beegle, 2000; Okojie (2002) Gan and Vernon (2003).

Poverty

Evidence from Chapter 5 revealed that poverty is highly endogenous to consumption as consumption can also determine poverty. Including poverty measures to attempt to control for poverty-economic vulnerability link is likely to be harmful to the economic vulnerability model.

This variable need not be included in a model; instead it has been used in this thesis to confirm the robustness of the consumption allocation measure.

6.1.4 Examined Hypotheses and Selected Determinants

In all indications, very few studies that empirically focus on identifying economically vulnerable elderly in developing countries utilise a quantitative approach (Lloyd-Sherlock, 2006;Alam, 2006). When they do, they are based on descriptive analysis and a mixed methods approach, with a heavier slant on generating qualitative evidence. I have drawn on the household welfare literature for the selection of some of this study's variables, as well as this study's own preliminary analysis. Based on equation (3), I formulated some expectations about the relationships between the socio-economic variables and this study's economic vulnerability measure. Finally, while it is useful to form this study's expectations of the relationships in this way, great care must be taken in addressing the controversies inherent in applied econometric work regarding estimating reduced form household welfare models, as well as other applied econometric work considerations.

Therefore, from Chapter 5, the basic determinants on a household level are the following:

$H_{h = \Phi}$ (Household Size, Region, Occupation, Housing)

Substituting, Ii and H_h above, the economic vulnerability model becomes the following:

Consumption per capita $= f$(age, gender, marital status, occupation, education, household size, region, housing).

This study's basic expectations, *ceteris paribus*, are that the following:

A.   Age is positively associated with consumption per capita (Hypothesis 1).

B.   Gender (being a female head) is positively associated with higher levels of consumption per capita (Hypothesis 2).

C.   Being married is associated with higher levels of consumption per capita (Hypothesis 3).

D.   Working in the public sector is associated with lower levels of consumption per capita (Hypothesis 4).

E.   Higher levels of education are associated with higher levels of consumption per capita (Hypothesis 5).

F.   Household size is associated with lower or higher levels of consumption per capita (Hypothesis 6).

G.   Housing or home ownership is associated with higher levels of consumption per capita (Hypothesis 7).

6.2 Definitions and Variables of Interest

Table 6-1 Definitions and variables of interest

Variable	Definition
Household level variables	
Log Consumption per capita	Welfare measure of economic vulnerability
Gender:	
Female	dummy variable (Female =1, 0 otherwise)
Male	dummy variable (male=1, 0 otherwise)
Age	Age of household head
Agesquared	the square of age
Age categories:	
15-49	dummy variable (1= household head is aged 15-49, 0 otherwise)
50-59	dummy variable (1= household head is aged 50-59, 0 otherwise)
60-69	dummy variable (1= household head is aged 60-69, 0 otherwise)
70-89	dummy variable (1= household head is aged 70-89, 0 otherwise)
90-	dummy variable (1= household head is aged 90plus, 0 otherwise)
Marital status: Marital	
Married	proportion of married heads
Widowed	proportion of widowed, divorced or separated heads
(a)Never married	proportion of unmarried heads
Sector of employment: OccuSec	
Public	dummy variable (1= works in government., 0 otherwise)
Private	dummy variable (1= works in private sector., 0 otherwise)
Religious	dummy variable (1= works in religious org., 0 otherwise)
Self employed	dummy variable (1= works in self-employment., 0 otherwise)
Other classifications (not easily classified)	dummy variable (1= works in other., 0 otherwise)
Education level:	
University/Nursing – Highly educated	household heads with advanced education (B.Sc and above)
Senior Secondary/A Levels	household heads with senior secondary education (B.Sc and above)
Junior Secondary/Vocational College	household heads with secondary education (B.Sc and above)
Primary	household heads with primary education (B.Sc and above)
Illiterate/ Semi-illiterate	dummy variable (1= no education, 0 otherwise)
Less educated (E2+ E3+ E4)	dummy variable (1= has primary education and less, 0 otherwise)
Highly educated	dummy variable (1= has advanced education, 0 otherwise)
Years of schooling	number of years of schooling
Region:	
North central	households reside in North Central Nigeria
North east	households reside in North East Nigeria

Variable	Definition
North west	households reside in North West Nigeria
South east	households reside in South East Nigeria
South south	households reside in South South Nigeria
South west	households reside in South West Nigeria
Home ownership status:	
Owns a home	dummy variable(1= owns home, 0 otherwise)
Free housing	dummy variable (1= has authorised free housing, 0 otherwise)
Free housing non-authorised	dummy variable (1- has unauthorised free housing, 0 otherwise)
Rental housing	dummy variable (1= lives in rented accommodation, 0 otherwise)
Household (HH) size	Household Size
Household size (HH) squared	square of household size

6.2.1   Model Specification

Intuitively, I can interpret the model that any increasing or decreasing effects on household consumption or income are likely to be key determinants of economic vulnerability. The determinants are on the right side of Equation 5 below, and they feature as the explanatory variables in the estimation.

Mathematically, this study's simple OLS model can be expressed as follows:

$$Y_i = \beta_0 + \beta_1 X_1 + ... + \beta_k X_k + e_i, \qquad (5)$$

Where Y is consumption per capita; and this study's dependent variable, α, is a constant; $\beta_{1 \text{ to }} \beta_k$ are unknown coefficients; and e_i is an error term.

This study's regression specification for the consumption model can be expressed as follows:

LnY = β_0 + β_1 gender + β_2 HHsize + β_3 married + γ age categories + β_4 education+ γregion dummies   + γoccupation   dummies   + γhome   ownership   dummies   + ε_i (6)

I estimate Equation (6) above for only urban elderly households as that is the main objective of the study.

6.2.2   Determining Functional Forms of the Model: A Multi-variate Box-Cox Analysis

I examined the functional form of the relationships with a Box-Cox bivariate analysis procedure to ensure that this study's model has not violated the conditions of a linear regression model.

The Box-Cox procedure was developed by Box and Cox (Box and Cox, 1964) and has become a conventional method for discriminating among various functional forms. It provides a more formal method to strengthen this study's process of model selection and elimination. The main advantage of the method is its flexibility in improving model specification. Like any method, there are inherent disadvantages which are well-documented in the literature. Noteworthy is the difficulty in undertaking a transformation analysis for a model with 9 or 10 regressors, especially where most enter into this study's model as dummy variables. As the Box-Cox procedure works on the assumption that all variables are strictly positive, therefore, most of this study's variables will not need to be transformed. I therefore restrict this study's bivariate Box-Cox analysis to age on expenditure per capita, given that the effect of age is an important determinant in the study.

Using equation (4), I express a monotonic Box-Cox transformation below:

$$Y^{(\theta y)}_t = \beta_0 + \beta_1 X^{(\lambda k)}_1 + ... + \beta_k X_{kt} + u_t \quad , \qquad (7)$$

where for each observation t, u_t is an independent and normally distributed error term, $\varepsilon \sim N(0, \sigma^2)$; λ_y, and λ_k are two Box-Cox transformation parameters to be estimated; Y_t is a dependent variable to be transformed by θ; $X^{(\lambda k)}_1$ is the exogenous variables to be transformed; X_{kt} (k= 2…K) are the untransformed exogenous variables; β_k are the coefficients on the transformed and untransformed exogenous variables, (k= 1,2…K); and β_0 is a constant.

In empirical analysis, three power transformations are commonly used: $\lambda=1$, a linear form; $\lambda=0$, a logarithmic transformation; and $\lambda= -1$, an inverse form. The transformations for any variable T can then be defined as follows:

$$T^{(\lambda t)} = (T^{(\lambda t)} - 1) / \lambda_t, \; \lambda_t \neq 0 \text{ and}$$

$$T^{(\lambda t)} = \text{Log } T \text{ for } \lambda_t = 0 \qquad (8)$$

The test was conducted in Stata using the 'boxcox, theta' command. The theta option enables Stata to transform each side by a separate parameter, and Equation 7. Table 6-2 presents the results.

Table 6-2 Fitting comparison models for LR tests: Box-Cox bivariate transformation (consumption per capita and age)

DV= Total expenditure per capita	Coefficient	Std. Err	P>|z
Lambda	0.054	0.023	0.019
Source: NGHPS 2010			

Table 6-3 Constraints tests of three functional forms

Functional form	Lambda	LLmax	Chi-square	P-value
Linear	1	-10556.42	112.51	0.000
Log-Linear	0	-9998.10	5.86	0.000
Inverse	-1	-12677.23	5364.12	0.000
Source: NGHPS 2010. Tests for constraints (null hypothesis (Ho)				

Table 6-3 presents chi-squared statistics and shows that all three standard functional forms are rejected. The convention is to use the estimated lambda. The rule of thumb is that if it is close to 0, then it supports a log-linear model; and if it is closer to 1, a linear functional form can be reasonably assumed. In this case, this study's estimated lambda is 0.054. Given the results, I can conclude from the chi-square statistics that this study's cross-sectional data favours a log-linear form, in line with this study's earlier finding. All other functional forms are rejected. I am satisfied that a log-linear reduced form is the most superior in estimating the determinants of economic vulnerability based on the results from this study's diagnostic tests of the log-linear model using the standardised consumption per capita variable. An inspection of this study's diagnostic test estimates indicates that this study's model is specified correctly, providing support that it does not suffer from any omitted bias error, or if there is any it is very weak. I now turn to discuss the other robustness tests performed in this chapter.

6.2.3 Linearity and Collinearity

The assumptions underlying a regression model apply to this study's model. In order to estimate the parameters of the model, no exact linear relationship must occur (Greene, 2008:11). Simple correlations and the coefficient of determination are often used in the literature to test for non-exact linear dependency in regression models. The rule of thumb is that these correlations or R^2 must not greater than 0.8 or less than -0.8. Variance inflation factor (VIF) values are also a useful method for detecting multicollinearity. I compute simple correlations to reveal the relationship that this study's explanatory variables have with each other. The indications from the matrix of simple correlations reveal more about the data and the linear dependence among the variables.

6.2.4 Robustness Analysis Results

A test of multicollinearity is performed. VIF (variance Inflation factors) values are estimated after the regressions using Stata's 'estat vif' command. The rule of thumb is that this ought not to be greater than 10 (O'brien, 2007).

Results in Table 6-4 shows a very low VIF value of 3.32, leading me to believe that if collinearity is present, it is not harmful. I am satisfied that the model does not have an omitted variable bias based on the Ramsey Test.

I utilised age categories instead of age, and I included AGE^2 and $HHSIZE^2$ to capture non-linear effects. AGE^2 did not improve the model much, but $HHSIZE^2$ did. Therefore, I excluded the former and included the latter. Marital status was excluded for the same reason as AGE^2.

Table 6-4 Diagnostic testing of reduced form OLS regressions for determinants and consumption per capita for urban elderly households in Nigeria

DV= Log consumption per capita)	
Test statistics (k)	OLS regression
Multi-collinearity:	
Variance Inflation Factor (VIF) test	3.32
Specification test (Ramsey's RESET test)	1.04 (p value = 0.3820)
* $p<0.05$ indicates significance at the 5% level; ** $p<0.01$ at the 1% level; at *** $p<0.001$ at the 0.1%	
Source: NGHPS 2010	

6.2.5 Omitted Variable Bias

An omitted variable bias occurs when a model has been mis-specified because it has excluded a key explanatory variable model which is closely related to the dependent variable in the model. The convention is to use a diagnostic test such as the Ramsey RESET specification tests. The estimates would indicate whether there is an omitted bias error.

The debate on resolving an omitted variable bias is controversial. Notable econometric textbook authors advocate for the inclusion or exclusion of the omitted variable to solve this problem. Applied econometric researchers argue that in practice, it is problematic to do so and may result in inefficiency of the model if variables are included or excluded without any basis, to eliminate the specification issue. Ken Clarke's well-cited papers present the various debates on the issue (see Clarke, 1996, Clarke (2005). Nevertheless, there is a consensus that theory and empirical evidence should be the main guiding strategy in the inclusion of any variable in the model, and I support this view. The changes of R^2 and changes in the coefficients of other explanatory variables are two criteria for identifying the usefulness of including an additional variable.

The convention in the empirical literature is to relax the assumptions of linearity in this study's model by considering that one of the variables in the model may have a non-linear relationship with another variable which has been excluded. It is a commonly-held practice to control for unexplained effects in household size because it may have a non-linear relationship with expenditure per capita, and the convention is to include a multiplicative household size variable ($HHSIZE^2$) to capture all non-linear effects.

Another way is to use correlations to examine other dimensions of economic welfare in the literature which may have been omitted. For example, Appleton (2001) justified the omission of health status, in his study of household poverty in Uganda, based on available empirical evidence which reported a weak association with consumption in Uganda and other parts of Africa. In the next section, I present the OLS estimates for equation (6).

6.3   Econometric Results

In this section, I present the non-causal evidence from the estimated model. This chapter's analysis primarily examines the socio-economic factors that influence economic vulnerability. The dependent variable was the log of consumption per capita, the proxy for economic vulnerability. The other covariates are the hypothesised determinants which I earlier discussed above, in Equation (6). I accepted a log-linear functional model as the best fit, and I am satisfied that the model does not suffer from harmful omitted variable bias and multicollinearity based on this study's diagnostic test results discussed above.

OLS and Quantile Regression results

Table 6-5 presents OLS and quantile regression results from this study's estimations of the economic vulnerability (EV) model. Column (1) presents the OLS regression estimates, and Column (2) – (5) presents the quantile (median) regressions estimated at various points: 25%, 50%, 75%, and 90%. Both the coefficients of OLS and quantile regressions are interpreted in the same way; however, the coefficients of each quantile regression in Column (2) – (5) should be interpreted as the impact of a household having a higher or lower consumption quantile conditional on the whole economic vulnerability distribution in each corresponding quantile. In all the regressions, I estimated the equation using the same controls in Equation (6). Some interesting findings emerged from the empirical analysis.

In line with this study's expectations, the age of the elderly household head has a statistically significant impact on consumption allocation in the model—it is negatively related to our welfare measure of economic vulnerability in all cases. Intuitively, as the age of the household head becomes more advanced, the household is likely to suffer more from economic

vulnerability compared to their younger-old counterparts. This confirms that theoretical expectations between age and income in the empirical literature, in some of the studies that which I reviewed in Chapter 2 (Deaton, 1992;Börsch-Supan, 1992;Alessie and De Ree, 2009). Those at the more advanced ages of 90 years and above reduced consumption allocations by 98%, although this association was statistically significant at 10%.

In Column (1), the age relationship was significant at the 5% significance levels for advanced ages. The age differentials differed by quantiles. Comparing column (3) and (5), I see greater age differentials in levels of economic vulnerability at the median of the distribution compared to those at the higher end of the distributions. These age differentials also vary within quantiles, especially at the top-end of the probability distribution. At a cut-off point of 75%, age is negatively associated with consumption allocations at the 5% and 1% statistical significance.

Table 6-5 OLS and Quantile regression results of correlates of consumption allocation

Dependent Variable = Log of Consumption Per Capita	OLS	Q0.25	Q0.50	Q0.75	Q0.90
Age category: Reference: 15-49					
50-59	-0.049	0.031	0.048	-0.566*	-0.466
	(0.238)	(0.261)	(0.197)	(0.234)	(0.297)
60-69	-0.241	-0.128	-0.054	-0.634**	-0.567+
	(0.242)	(0.267)	(0.202)	(0.239)	(0.304)
70-79	-0.168	-0.125	-0.065	-0.645*	-0.558+
	(0.257)	(0.286)	(0.216)	(0.256)	(0.326)
80-89	-0.417	-0.493	-0.310	-0.812**	-0.341
	(0.302)	(0.346)	(0.261)	(0.310)	(0.394)
90+	-0.983+	-1.547*	-0.715	-1.090+	-0.868
	(0.520)	(0.722)	(0.545)	(0.647)	(0.823)
HH size	-0.242***	-0.215**	-0.263***	-0.227**	-0.306***
	(0.046)	(0.080)	(0.060)	(0.072)	(0.091)
HH size squared	0.007***	0.005	0.009*	0.006	0.011*
	(0.002)	(0.005)	(0.003)	(0.004)	(0.005)
Region (Reference: North central					
North east	-0.464**	-0.387	-0.513*	-0.446+	-0.468
	(0.178)	(0.285)	(0.215)	(0.256)	(0.325)
North west	-0.414*	-0.524*	-0.410*	-0.432+	-0.430
	(0.174)	(0.249)	(0.188)	(0.223)	(0.284)
South east	-0.498**	-0.512*	-0.427*	-0.420*	-0.230
	(0.176)	(0.227)	(0.172)	(0.204)	(0.259)
South south	-0.052	-0.294	-0.061	0.013	-0.040
	(0.179)	(0.232)	(0.175)	(0.208)	(0.265)
South west	-0.218	-0.254	-0.257+	-0.196	-0.350
	(0.137)	(0.202)	(0.153)	(0.181)	(0.231)
One generation HH	0.587**	0.669*	0.569*	0.716**	0.599+
	(0.193)	(0.297)	(0.224)	(0.266)	(0.339)
Two generation HH	0.504*	0.591+	0.715**	0.366	0.130
	(0.233)	(0.348)	(0.263)	(0.312)	(0.397)
Elderly head and Adult child	-0.440+	-0.525	-0.678*	-0.257	0.045
	(0.259)	(0.393)	(0.297)	(0.353)	(0.448)
Elderly head and Grandchild	-0.462	-0.195	-0.650+	0.077	-0.178
	(0.374)	(0.457)	(0.345)	(0.409)	(0.520)
Three generational HH	0.337	0.063	0.056	0.826*	0.430
	(0.287)	(0.397)	(0.300)	(0.356)	(0.453)
Four generational HH	-0.088	-0.291	-0.167	0.163	0.030
	(0.162)	(0.235)	(0.178)	(0.211)	(0.268)
NEC multiple HHs	0.039	0.270	-0.060	-0.028	-0.041
	(0.192)	(0.496)	(0.375)	(0.445)	(0.566)
Intercept	12.347***	11.795***	12.200***	13.457***	14.074***
R^2	0.423				

Notes: Standard errors in parentheses. HH-denotes households. Statistical significance is denoted by: + $p<0.10$ (10%), * $p<0.05$ (5%),** $p<0.01$ (1%), and *** $p<0.001$ (0.1%). Model also includes: housing tenure choice controls, education, occupation, and gender.
Source: NGHPS 2010 (urban elderly households sample) *N=455*

In line with this study's expectations, household size and household structure types were mostly statistically significant in the consumption allocation model. They are negatively related to consumption levels and are statistically significant in all cases.

These are indications that as the household size becomes bigger, there may be positive effects on consumption allocation. Controlling for non-linear effects in household size, the squared household variable is positively related to consumption levels, suggesting that there might be scale economies advantages as the household becomes significantly larger. This supports the scale economics argument and some studies in Nigeria. In addition, single-headed elderly households in the lower quintile of household are better off than other single-headed households in the middle and higher quintiles. When household size is doubled, it increased consumption allocation by 0.7% in the OLS and 0.9% in the middle quantile, and 1% at the 90% cut-off point.

Region is also an important determinant. The Northern region is the poorest region in Nigeria. In the OLS and the lower to the higher quintile (Column 1-4), I found mixed evidence. While in the highest quintile, I found a consistent negative relationship with consumption level. For the South South and South West, often described as the richest zones in Nigeria (Chapter 3), the differences were largely insignificant in all cases. Across all the models, region was weakly related to economic vulnerability. Across the quantiles, the differences are more glaring for the Northeast and Southeast regions, which were significant at the 5% significance level. In the highest quintiles, living in the South South region did not decrease consumption per capita significantly. One explanation for this mixed result is partly due to the high aggregate levels of poverty in Nigeria across all zones, which often makes it difficult to find glaringly obvious regional differences in economic welfare outcomes. Nevertheless, from available statistics in Nigeria, the differences in regions suggest that there are likely to be differences in consumption allocation levels for households, confirming regional location as a tested determinant.

In the model, occupation and education were good controls, although they were largely insignificant in the model. Only in one case in the OLS model was working in religious occupations (compared to self-employment) significant. It would difficult to infer a strong relationship between occupation and consumption allocation based on this single occurrence. In Section 2.2, I demonstrated that both variables were likely to be important to the economic welfare of older Nigerians, on an individual level using descriptive analysis. On a household level, it is possible that any advantages that education and occupation bring, on an individual level, does not directly influence the consumption allocation welfare measure in the way that theory would suggest. In relation to these two variables, understanding the decision-making at

the household level may better reveal their true welfare-improving nature through consumption allocations.

Other controls such as gender were not significant. This study's preliminary analysis in the previous chapters revealed gender to be an important to determining levels of economic resources available to a household, based on the literature (Appleton, 1996;Okojie, 2002), and the NGHPS 2010. However, the lack of a significant relationship in this study's model is likely to be as a result of other unobservable factors, which from the data are difficult to identify (Quisumbing et al., 2001). Our finding is therefore not unusual. One study by, Lloyd-Sherlock (2006) found no apparent gender differences in economic vulnerability among Thai elderly, suggesting that if gender is likely to be important in understanding why some older people or households are more economically vulnerable than others, its relationship to economic welfare measures is likely to be a complex relationship.

As I suspected from the findings in Section 5.1.4, housing tenure choice, including home ownership was not an important correlate of economic vulnerability. In Section 3.1.7, I discussed empirical studies in Nigeria, which argue that the economic burden on poor urban elderly households without employer-provided housing or an owned home is likely to be higher than that of other households. These scholars argue that affordable housing should be a primary concern of the Nigerian government (Ndubueze, 2009;Aribigbola, 2008). For urban elderly households, it is not evident that there is an association between housing tenure types and the consumption allocation welfare measure based on the data in the NGHPS 2010. Without information on housing prices and how much was paid at the purchase date, it is difficult to ascertain if those that own homes bought them using loans of some kind, since the repayment may place a huge demand on elderly households. The Nigerian Housing Policy recommends that households not spend more than two-thirds of expenditure on housing. The dataset does not allow one to verify which households have such housing loan arrangements in place. Even so, this discrepancy in the finding on housing tenure choices and consumption allocation in this chapter is quite relevant from a policy perspective and I will re-visit this issue in the policy implications section in Chapter 8.

6.4   Concluding Remarks

The purpose of this chapter has been to empirically investigate the determinants of economic vulnerability amongst elderly households in urban Nigeria using a reduced form household consumption model. I have identified key correlates of economic vulnerability from the empirical analysis using the NGHPS 2010, as age of household head, household structure, household size, and regional location.

The NGHPS is a rich and comprehensive household survey collected on Nigerian households in 2010. The household survey is a useful data source in conducting empirical analysis in household welfare studies. This study has taken a primarily welfarist approach which uses money metric measures such as income or consumption to examine welfare and poverty amongst vulnerable groups.

The analysis shows that additional information is required on other indicators that may relate to economic vulnerability, through consumption allocation. In light of this, this study's results should not be taken as the sole basis for targeting policies towards elderly households. Nevertheless, the NGHPS has provided useful correlates of economic vulnerability. It is the first study to utilise both OLS and Quantile regressions to examine the association between socio-economic factors on economic vulnerability amongst urban elderly households. I found that this study's key determinants of economic vulnerability are: age of household head, household size, household structure, and regional location. These findings have significant policy implications as shall be seen in later text.

The strong confirmatory evidence found between age and consumption allocation is consistent with the findings in the literature. This study's findings on age are similar to studies on households in Nigeria where poverty increases with age (Mberu, 2007; Appleton et al., 2008; Anyanwu, 2011). Intuitively, these findings highlight that economic capacities of elderly people is likely to worsen as they grow older. Examining mean values by age in Section 5.3 suggested that average consumption allocation values rises with age. Yet, the empirical evidence in this chapter has demonstrated that using those descriptive means on its own, would have been misleading. The contributions in this chapter highlight that elderly households headed by older people in advanced ages are likely to be more economically vulnerable that their younger counterparts.

As expected, I found some support that there are regional disparities in economic vulnerability amongst elderly households. Untangling the regional disparities would probably require a state-

level and community analysis to verify the consistency of the disparities which I do not have in this dataset.

Other similar household composition measures such as proportion of children and number of working age adults may not capture all the household composition effects on economic vulnerability. In addition to household size, issues relating to power, nutritional needs, and labour allocation decisions at the household level would provide more information. From the individual-level analysis in Chapter 4, there were educational and occupation differences between those in the in the self-employment sector compared to those working in the private and public sectors. On a household level, these patterns were not observed suggesting that the association of these two variables with consumption allocation is likely to be more difficult to untangle at the household level.

Despite the mixed findings in this chapter, the analysis is a useful addition to the household welfare studies as it adds an elderly household dimension to the empirical literature. This study's Box-Cox transformational analysis found the log-linear function most preferable. Results from this study's robustness tests revealed that this study's reduced form model was adequately specified, and multicollinearity was weak or absent. This work has the advantage that it can be routinely replicated as the NGHPS lengthens over the next few years. Secondly, this study has presented a robust functional relationship between socioeconomic determinants and consumption allocation.

The model could potentially also be applied to other settings to study elderly households. Although, the model is limited for the purposes of conducting a dynamic analysis of economic vulnerability, the model could be extended to include other useful variables if the data permits, such as examining the effects of the identified determinants on other welfare outcomes such as housing affordability outcomes.

Finally, in this empirical analysis, I have identified the determinants of economic vulnerability through a consumption allocation model. I have also shown that some elderly households are more economically vulnerable than others due to the age of the household head, they structure and size of their household, and the region they reside in. In the next chapter, some of these determinants act as useful controls in examining the health-related consequences of economic vulnerability using the same consumption allocation measure. I now turn to address this study's second main question in the thesis: Does economic vulnerability (through consumption allocation) directly influence health status and health spending? The chapter presents the first study of the health-related consequences of economic vulnerability using the NGHPS 2010 data.

7.   Health-Related Consequences of Economic Vulnerability

Previously in Chapter 2, I reviewed the empirical and theoretical literature that links welfare measures to health. Drawing from this vast literature, it is reasonable to assume that economic vulnerability can have a direct impact on the health status among urban elderly Nigerians. If some elderly people are economically vulnerable, they may be less likely to seek health care, which in the short-run and long-run could lead to a bad health status, all things being equal. On the other hand, a bad health status may be worsened by economic vulnerability from less use of health care to maintain one's health. From the public health literature in Nigeria, there are indications that poor financial status is restricting health care use amongst elderly Nigerians, which is widening health inequity among elderly people (Sanya et al., 2008).

These effects may result in a continuous cycle of vulnerability in the short and long run. But, due to the nature of the NGHPS, this chapter's concern is with the short-term effects to address the study's second research question: Does economic vulnerability (through consumption allocation) directly influence health status and health spending? In Chapter 6, Consumption allocation was modelled as the dependent variable. In this chapter, consumption allocation welfare measure becomes the independent variable and is modelled as a key driver of the study's health variables.

This chapter presents the first econometric analysis of consumption per capita and health outcomes among elderly households. This is the main contribution of the chapter. Although I am unable to examine causal relations about the consumption allocation-health relationship due to the lack of longer term data, empirical associations are just as informative, and the main questions relating to the health-related consequences of economic vulnerability can be competently addressed using the information in the NGHPS 2010.

The NGHPS asked questions about physical functioning (otherwise known as activities of daily living, or ADL). In developing country surveys, ADLs are the norm because they are cheaper to administer (Appleton, 2000) and perhaps more easy to understand for respondents, compared to much more complicated clinical assessments. They have also been known to provide less bias than subjective measures that are based on rankings. According to Appleton (2000), ADLs suffer less from the well-known biases which plague most self-reported health measures. The author posits that it is probably more useful in identifying the health status of the elderly (p.4). In his study, Alam (2006) also utilised ADL to examine disability and functional health in India.

The ADL information and information on annual out-of-pocket payments (OOP) on prescription and hospital bills, illnesses, and health care utilisation in a 4-week period was collected on an individual level in round 2 of the NGHPS in 2010. Annual household health expenditure was collected in round 1 of the NGHPS. Health expenditure is a good proxy for medical care use (Xu et al, 2003, 2007). In Chapter 4, I examined the health measures in the NGHPS and was satisfied that the self-reported measures are valid. In Chapter 4, I also addressed the debates in the empirical literature about self-reported health measures.

The main research questions at the individual and household level are subsumed below. By addressing these questions, I can understand the effects of economic vulnerability (through consumption allocation) on health and vice versa—a useful pre-cursor to the policy discussion in Chapter 8.

7.1 Research Questions

This chapter contributes to the literature that examines health status and its links to economic indicators. To prompt policy action, it is pertinent that I understand the impact of being economically vulnerable by using health measures. I therefore examine the following questions:

- Does economic vulnerability (through consumption allocation) affect the health statuses of elderly Nigerians?
- Does economic vulnerability (through consumption allocation) affect health spending among urban elderly Nigerians?

The rest of the chapter is organised thusly: Section 7.2 discusses the methodology for the chapter. Sections 7.3–7.4 examine the relationship between SRHS and consumption allocation using a simple model with controls. Sections 7.5–7.6 discuss the estimation strategy and estimated results. Section 7.7 examines the link between health spending and consumption allocation. Section 7.8 discusses the results and concludes.

7.2   Methodology

7.2.1   Identification and Choice of Health Measures

I recognise that just as there is multi-dimensionality to the consequences of poverty and wellbeing, the same applies to my assertion that economic vulnerability can affect health outcomes. However, it is my belief that a focused study using one objective measure of economic vulnerability and health outcomes provides a much-needed depth rather than breadth, in order to understand the consequences of economic vulnerability among urban elderly Nigerians. Despite this stance, I concede that the economic vulnerability may be linked to other potential consequences, besides objective health measures. One example is the link to subjective happiness; does economic vulnerability affect elderly happiness more than others? Studies on self-reported happiness on elderly Nigerians are missing from the literature. Globally, self-reported happiness and economic vulnerability have been empirically linked (Deaton, 2007).

In the NGHPS, individual respondents were asked health questionnaires whether they could run, bend or stoop, and walk over 100m and 1km; these were yes/no responses. The physical and sensory aspects (ADL_p and ADL_s respectively) involved questions around seeing, hearing, walking or climbing steps, concentration, and self-care. Respondents had four categories to choose from based on perceived difficulties (No, No Difficulty, Yes, Some, Yes, A lot, and Cannot Do), this being the equivalent to the Excellent, Good, Fair, and Poor rankings found in most of the more Westernised studies mentioned above. Out of the 27,993 individuals sampled in the NGHPS, an urban elderly sample of 1,063 individual respondents age 50 and above was pooled.

Box 7-1 presents the ADL_s. With respect to ADLs in the NGHPS, due to the low reports of those with difficulties, I have modified the variable ADL responses from the four categories into two categories: 1= 'No, I have no difficulty', and 2= 'Yes, I have a difficulty'. This is done for simplicity and to cohere with the ADL_p variables. As the sensory and physical domain ADLs had very few cases (less than or equal to 25), the ADL_p measure was a better choice.

Box 7-1 Showing the types of activities of daily living (ADL) and indicators of self-reported health

Notation	Type of ADL	Indicator categories
ADL_p	ADL limitations (physical domain only)	Yes/no
ADL_s	ADL Limitations (physical, self-care and sensory)	1= No, No difficulty 2 =Yes, some 3= Yes, a lot 4= Cannot do
Source: NGHPS 2010		

In most developing country studies, the use of ADL limitations to measure the health statuses of elderly people is the most common approach (Baiyewu et al., 1996; Deaton and Paxson, 1997; Case, 2004; Alam, 2006) instead of the self-assessed health status which asks respondents to describe and rank their perceived overall health. Additionally, it is believed to be more representative of variations in health, particularly amongst the elderly (Appleton, 2000).

The NGHPS does not have the self-reported health status which is based on perceived rankings of overall health, which is typically reported in developed countries. It contains information on self-assessed functional health statuses which is based on questions around the basic ADL. The development of the ADL classification to study the elderly and chronically ill can be traced to Katz et al. (1963). The authors developed an index of ADL based on biological and psychosocial limitations such as bathing, feeding, and going to the toilet. Using a sample of 1,001 individuals and 2,000 evaluations, they found that the ADL is an objective tool for studying the ageing process.

In Chapter 4, I examined ADL (Activity of daily Living) limitations as a more superior measure of health status. The main strength of ADLs lies in its avoidance of extreme assumptions of adult ill-health compared to BMI measures. One good illustration is the study by Schultz (1996). The author used BMI and height scores to examine the impact of health on wages in two African countries— Cote d'Ivoire and Ghana. Using LSMS surveys, the author finds that a one unit increase in BMI is correlated with an increase in wages by 9% for women in both countries and 15% and 7% in Cote d'Ivoire and Ghana respectively for men. The issue here is that at time of the study, increases in BMI may have been synonymous with better health in these African countries. In recent times, it would be misleading to view increases in BMI as an indication of a better health status, especially in light of the growing concerns about obesity in African countries like Nigeria and Ghana (Akpan and Ekpenyong, 2013). Indeed, the functional model of health which defines health based on older people's perceptions of their levels of functioning is fitting of the Nigerian context and for a study of ageing. In chapter 4, I have

verified the validity of the study's ADL measure and proceed to the model specification to address the first part of the research question.

7.2.2 Potential Endogeneity of Health Expenditure

The issue of potential endogeneity is a problem that is often encountered in applied economic work, including studies that explore the link between health expenditure and consumption expenditure. The endogeneity problem has produced a vast literature on the subject (see Bazzi and Clemens, 2013;and Ashley and Parmeter, 2015 for a thorough discussion). The main thrust of the problem is that a variable may very well be appearing in both sides of the regression, which may lead to inconsistent OLS estimates. This same issue was also discussed in the previous chapter in relation to the endogeneity of the poverty variable.

The difficulties in finding valid instruments have been well-documented. For example, in our case, the challenge with the IV approach is that one needs to find a variable that is strongly correlated with health expenditure, but is uncorrelated with my proxy of economic vulnerability, that is, consumption expenditure. The implication of using weak instruments is that it can lead to inefficient IV estimates, which then does not provide a more superior method to the OLS method. In practice, it is recommended that if the aim is to maximise R^2 for a set of explanatory variables then the OLS is a better approach. However, where causal relationships between X and Y is of interest, then it is advisable to use an IV method. Conventional instrumental approaches with two stage predictor models are often used to minimise endogeneity bias (Terza et al., 2008).

In practice, where no valid instruments can be found, one approach of circumventing the endogeneity issue is to exclude health expenditure from the total consumption expenditure figure or use different reference periods (Bonu et al., 2009). As the NGHPS only captured health data in one period, the latter approach was not feasible. Later on in the chapter, I present the effect of controlling for endogeneity on the OLS estimates. The usual tests of multicollinearity and omitted variable bias were undertaken as in Chapter 6. I now proceed to the model specification to address the first part of the research question.

7.3 Health Status and Economic Vulnerability: Household-level Analysis

In Chapters 4, I have established that the ADLp measure for examining health status among urban elderly Nigerians is valid. The analysis in Chapter 4 revealed some interesting patterns about the health status of urban elderly Nigerians. I found that ADL limitations are a good measure of SRHS amongst elderly households based on this study's validity test.

Particularly in Chapter 4, I found that it is impossible to demographically separate the resources of older people from the rest of the household using the NGHPS. As in the previous two chapters, all the analysis in this chapter utilises household level data. Given the nature of the dependent variable and my findings in Chapter 4 on the scope of the NGHPS, analysing the consequences of economic vulnerability on a household level is likely to produce consistent results.

In this section, I address the following research questions:

- **Does economic vulnerability (through consumption allocation) directly influence self-reported health status?**

7.4 Model Specification and Empirical Strategy

In this section, I present this study's illness model and estimation strategy. The variables have been selected based on guidance from theoretical and empirical literature. I also use correlations and chi-square statistics to identify the possible relationships from the estimated model.

7.4.1 Health Status-Consumption Allocation model

I have noted in the theoretical literature that Grossman's model is the conventional model of choice. I utilise the extensions of the model in the static generalised version of Grossman's model introduced by Muurinen, as this best fits this study's one-period data. Also, given that I do not have data on prices, the latter model also allows me to ignore prices and specify the health status-consumption allocation relationship.

Therefore, I specify a reduced form health model based on Grossman's health demand model, ignoring the stock of health (H_{t-1}) and prices of medical inputs found in Grossman's original model.

Utility is, therefore, expressed as a function of health stock and consumer preferences.

$U = U(H_t, Z_t)$, t = 0, 1, 2…, n , (3)

Where Ht is the current health status at time t, and Z_t are other unobservable predictors of health that are not closely related to H_t. H_t can be expressed as follows:

$H_t = f(Y, E, A)$ (4)

Y is income in period 1, E is education levels in period 1, and R is a vector of variables that affects the rate of depreciation of health which has been extended based on Muurinen's modifications.

R = f (age, gender, occupation, marital status, household size, number of children, location, bednet use, water source, toilet facilities, electricity) (5)

Inserting (5) into (4), I arrive at the following:

H_t = f (consumption per capita, education, age, gender, occupation, marital status, household size, number of children, location, bednet use, water source, toilet facilities, electricity) (6)

7.4.2 Variable Selection

Dependent variable (H_t): As I have earlier discussed in Chapter 4, the ADL_p measure is a valid dependent variable to address the question in this section. It is a dichotomous variable (1= has ADL limitations, 0 otherwise).

This study's main independent variable of interest is Consumption per capita welfare measure: This study's main independent variable of interest is consumption per capita (this study's welfare measure to identify those likely to be more economically vulnerable). I assume that this consumption allocation is an exogenous variable, although it is likely that even after adjustments, following Bonu et al.'s (2009) approach, some endogeneity may remain but may not be harmful, given that our interest is in maximising R^2. I include income quintiles to capture any other welfare effects in the model. The reference category is the poorest category. This study is interested in the effects of consumption allocation on health status. To arrive at a correctly specified model, certain demographic and socioeconomic factors are used as controls. The selection of these controls has been guided by the related theory. I discuss the rationale for inclusion in this study's model below.

7.4.3   Selected Controls

Variables affecting the rate of depreciation of health are specified in (R). I take some guidance from the theoretical and empirical literature in identifying these health-related control factors and to form some expectations of the relationship. In Chapter 2, I reviewed Grossman's model. In this section, I draw on its propositions to build my model.

According to Grossman's model, certain variables can affect health status by affecting the rate of depreciation of health. The variables in R can influence health status by reducing or increasing this rate of depreciation.

With respect to age, Grossman's theoretical model assumes that age decreases health stock. To avoid imposing a linear functional relationship, I specify five age categories to enable age effects at different ages to be observed. With respect to gender, the literature suggests that longevity for men is lower; therefore, they are less likely to be health, although, some studies have found that in the short run, women tend to report more health problems than men. Nevertheless, gender differences can influence health. In this study's preliminary analysis earlier in the chapter, I found that age and gender do not affect health status in the way predicted by the theoretical model. Given the empirical evidence that health decreases with age and that there are gender differences, I include both age and gender as possible predictors as it is possible that there are other factors that jointly affect health status.

As the empirical literature shows, certain manual occupations can lead to deterioration of health. I earlier discussed the study by Case and Deaton (2005b). The authors found that those in manual occupations where more likely to report poor health statuses compared to those in the professional sector.

Marital status has been known to influence health status. One empirical study in the United States by Goldman et al. (1995) found that marital status is associated with health in later life stages. Those that were married were better off, whilst widowed elderly had poorer health statuses, although those that were divorced or single have better health than married elderly. The authors used a national longitudinal data on aging from 1984-1990 and logistic regression models in their study. Their elderly sample consisted of those aged 70 and over. Controls used were age, gender, socio-economic status, race (being black), and social environment.

Manzoli et al. (2007) systematically reviewed the literature and used meta-analysis to estimate the strength of association between mortality and marital status amongst elderly people. Using

studies published after 1994 to the study date that were written in English, they find that the overall relative risk ratio (RR) for married people was the lowest compared to non-married elderly groups. The RR for married elderly was 0.88, while for non-married groups it ranged from 1.11 to 1.16. This suggested that marital status has some protective effects on health. In the 53 studies analysed, they found that the effect on marriage was consistent regardless of publication bias and statistical approach. Marital status is therefore likely to be a good predictor, and I control for this in this study's model by specifying the four categories: married monogamously, married polygamously, divorced, and widowed. By doing so, I take into consideration the two types of marriages commonly found in Nigeria as they are likely to differ in their effects. Polygamous marriages tend to have bigger household sizes. Secondly, household size is likely to introduce multicollinearity due to this study's consumption per capita welfare measure; therefore marital status is likely to control for household structure effects.

I also include the number of children as a possible predictor based on the empirical literature. Having a child in the household can directly influence the health statuses of other members through expenditure, and indirectly through health benefits that emerge from a child's good health outcomes. For example, there is evidence that households in Africa typically allocate medical expenditure to productive members of the household (Sauerborn et al., 1996). One study in the development studies literature has revealed that child health outcomes are better in urban areas than in rural areas in developing countries, although the urban poor have higher levels of mortality and stunting amongst children (Van de Poel et al., 2007). Drawing data on child health from demographic and health surveys in 47 developing countries, including Nigeria, the authors find that socio-economic status is a key driver of health status because those that are poor are unlikely to be able to afford good meals for children. The authors only examine the role of nutritional status and mortality rates. However, in Nigeria, there are more health programmes for maternal health and children compared to other populations, a feature that the authors do not consider in their study. Nonetheless, although it is not clear whether having more children would mean that more resources would be diverted into achieving child health outcomes or if the resources would be diverted towards productive members, as Sauerborn and his colleagues stated. This study's findings in Chapter 4 have revealed that some elderly people are also productive; therefore, a control on child effects becomes necessary. Hotchkiss et al. (1998), in their study of Nepalese households, find that spending on older children was higher than infant children. They attribute this difference to be indicative that parents may consider the health of older children to be more important. On the other hand, they posit that diseases of infants could be easier to treat than older children, hence the lower health spending.

7.4.4 Health and Location

Where one lives also matters, as documented in various studies in the literature (Strauss et al., 1993). Given the disparities in human development indices across the country, it is reasonable to expect that location can influence health status. Studies have also shown that per capita health spending is higher in the Southwest than in the North, suggesting that opportunities to maintain or repair health may be lower for some elderly than others in Nigeria. I have previously noted in Chapter 4 that there are disparities in poverty levels, which is indicative of less resources being devoted to health.

I include environment variables such as housing hygiene facilities and use of health promoting tools such as bednet use, water source, toilet facilities, and electricity, which Muurinen has shown can work to reduce health status. The NGHPS contains information on housing facilities. In addition to the three variables, it also collects data on the type of refuse disposal system used, and this variable was highly correlated with the water source variable. Therefore, I exclude this from the analysis.

7.4.5 Health Status and Education

Going by the consistent evidence in the empirical literature, education improves health and vice versa (Mirowsky and Ross, 2003;Grossman and Kaestner, 1997;Strauss et al., 1993;Ross, 1996). Theoretically, education features very prominently in Grossman's (1972) model. It is viewed as a key explanatory variable of health status because of its direct links to health demand. Studies have found that highly educated people are more likely to respond to health messages to improve their health, making them more efficient producers of health (Grossman, 2000). Strauss et al. (1993) find that those having higher education had lower probabilities of reporting physical functioning problems, compared to those with lower educational attainment. This, they argue, leads to 'systematic reporting bias'. They assert that if education is positively correlated to education, there is strong possibility that there are biases. I address this issue in the next section under this study's robustness analysis discussion.

7.5 Model Estimation Strategy

The most common method for examining the relationship among income, wealth, and self-reported health status is probit modelling. I adopt the dichotomous probit model, given the nature of the ADLp. The model's coefficients are estimated using maximum likelihood (Greene, 1993). One key advantage of the probit method is that it allows to the use of model binary or dependent variables.

A simple probit model takes the following functional form:

$$P = \emptyset \, (a + \beta X) \qquad , \qquad\qquad\qquad (7)$$

where P is the probability of an observation (y) being 1, where the dependent variable is coded 1 or 0 [y = (1, 0], a is the intercept (in the case of ordered probit model; a constant is usually not estimated, but thresholds are), β is the coefficient, and X is a vector of explanatory variables.

Equation 6 can then be re-written as follows:

$$P(ADLp = 1|x) = \emptyset(\beta_o + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k + u) \qquad (8)$$

If I assume that x_1 does not have a functional relationship with other explanatory variables, then β_1 captures the change in the probability of success given a unit increase in x_1 (p.562); if this variable is a binary variable, the coefficient is simply the difference in the probability of success given that $x_1 = 1$ and $x_1 = 0$, holding other explanatory variables constant. $\emptyset$ is the cumulative density function of the standard normal. This study's binary response variable, ADLp, equals 1 if an elderly person has one or more functional limitations, and zero otherwise.

In the model, the main interest lies in the response probability (Wooldridge, 2010:561). The signs of the β coefficients are usually interpreted based on the signs rather than the magnitude, unlike OLS estimates. I also estimate marginal effects at means in order to estimate the effect of a one-unit increase on the dependent variable to enable further model interpretations.

During estimation in Stata, I arrive at the most functional model by entering each variable one at a time and examining its impact on the model based on the z-scores, also known as the enter method. I use the robustness tests to arrive at the most functional model. The convention in the empirical literature is to specify three models– no controls, with age or gender controls, and with the full set of controls (Case and Deaton, 2005). From this study's individual analysis, I already know the demographic factors of age and gender, are not statistically significant. Therefore, I specify two models: one without controls and the second with the full set of controls. In the next section, I present a brief discussion on the robustness tests.

The conventional tests of robustness are estimated for consistency. The likelihood-ratio reports the joint significance of all of the coefficients, and it has a p-value of 0.003, indicating that this study's model is statistically significant with the inclusion of these predictors (Greene, 1995;Cameron and Trivedi, 2009). The convention is to examine multi-collinearity in non-linear models based on the convergence criterion (Griffiths et al., 1986). This study's model converges at the fourth iteration, providing support that multicollinearity is weak or absent. I had to drop the household size variable as it was highly correlated with consumption per capita (EV). I therefore estimate Equation (6) but without household size. I present the estimates from the two estimated models below.

7.6 The Health Status-Consumption Allocation relationship: Empirical Results

Table 7-1 presents the probit regression estimates of the health status-consumption allocation model. Column (3) contains the marginal effects of the model; Column (2) includes the full set of controls and Column (2) has no controls. I focus this study's discussion on the effects of consumption allocations only as this is the key concern in understanding which elderly household are likely to suffer more from economic vulnerability. Marginal effects measure the percentage changes in the probability of having a success in the health status in response to a percentage change in the consumption allocation variable, all things being equal. The marginal effects are approximations based on an additive scale, and they are useful in interpreting the partial effects of the coefficients of the probit model.

7.6.1.1 Coefficients of Probit Models and Marginal Effects of Consumption per Capita

Does consumption allocation directly influence SRHS? I find that consumption per capita is negatively related to the probability of reporting poor health status, which is significant at the 5% level. One way to interpret this finding is that those that are more economically vulnerable (less consumption allocation) in urban Nigeria are more likely to report a poor health status. This finding is hardly surprising as the economic status of households will directly affect health because they are less likely to go see the doctor if they are poor; therefore, they are less likely to have received a diagnosis about their ADL limitations. Also, given the likelihood that poorer households are less likely to be able to afford the opportunity costs of being ill, it is likely that this may have created a selection problem, where mostly richer elderly heads are likely to report a poor health status. Case and Deaton (2005), in their comparison with India and South Africa, found that poorer households were less likely to self-report health problems compared to South Africans.

This importance of economic status is confirmed by the quintile variable. Regardless of whether one is rich or poor, elderly Nigerians are less likely to report a disability, although the likelihood of reporting poor health status reduces with the poverty levels.

The marginal effects reveal that a 10% increase in consumption per capita will result in a 100% increase in the probability of a non-economically vulnerable elderly household reporting a poor health status.

Table 7-1 Probit regression estimates of economic vulnerability and health status among the elderly, Nigeria 2010

DV: ADL health indicator	Model (1) (without controls)		Model (2) (with full set of controls)		Marginal effects of (2)	
Variables	β	SE	β	SE	β	SE
Log of Consumption per capita	-0.008	(0.052)	0.480*	(0.187)	0.105*	(0.041)
N	799		589		589	
Pseudo R-square	0.000		0.101			
Model p-value	0.875		0.003			
Chi-square	0.025		60.420			

Note: Standard errors in parentheses. Economic Vulnerability Measure = Log of Consumption per capita
Control variables include: age, age^2, region, income quintiles, gender, marital status, occupation, housing tenure, health promoting activities, source of drinking water).
[+]p<0.10 indicates significance at the 10% level * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

7.7 Health Expenditure – Consumption Allocation model

In this section, I examine the consequences of economic vulnerability on health care demand. If elderly households are economically vulnerable, they are unlikely to use health care services to maintain their health. Therefore, two health spending measures are utilised: Health expenditure and Out-of-pocket (health) payments. My choice of both health measures have been detailed in Chapter 4. I have also extensively discussed the strengths of Andersen's model in Chapter 2. Its main strength lies in the identification of controls makes it suitable to the task at hand. In this section, I draw on this strength to identify the following as useful control variables in the health spending-consumption allocation model. The need for care variables are measures of health status (objective or subjective); the predisposing factors are socio-demographic factors such as age, sex, and marital status; the enabling variables are education, health insurance, employment or income, location, and household characteristics such as living arrangements; for example, living with adult children could proxy potential support.

7.7.1 Model Specification and Estimation Strategy

This study's main estimation strategies are the OLS and Tobit models. The convention is to estimate the reduced form model using OLS. Consumption allocation and the other socio-economic and demographic factors are the independent variables, and health expenditure per capita is this study's dependent variable.

Model Specification of Health expenditure-Welfare Allocation Model

Household consumer theory states that consumption expenditure is a function of economic resources and tastes and preferences of the utility optimising unit (Haddad et al., 1997). Incorporating socio-economic and demographic control variables based on Andersen's model, I arrive at the functional form below which is given by the following:

$LogH_e = \alpha + \beta_1 X + \gamma_2 ADLp + \gamma_3 P_1 + \gamma_4 P_2 + \gamma_5 P_3 + \gamma_{6-10} E_{1-5} + \mu$, (1)

Where,

$LogC_i$ = log of total health expenditure per capita, α is a constant, β_1, γ_{2-10}, are unknown coefficients, X is the consumption per capita (the welfare measure of economic vulnerability),

and the need for care variables is the measure of health status, ADLp; the predisposing factors are socio-demographic factors such as age, sex, and marital status (P_1 to P_3); $E_{1 \text{ to }} E_5$ are a set of enabling variables that are education, health insurance[37], occupation, location, housing, and household characteristics such as the number of adult children, For example, living with adult children could proxy potential support. As I discussed above, the number of children could also affect health spending in elderly households.

Hypothesis statement: There are no significant effects between health expenditure patterns of elderly households and economic vulnerability.

Using OLS regressions

This study's simple regression model is estimated using the **regress** command in Stata (Cameron and Trivedi, 2009). In estimating the effects of consumption allocation on health expenditure, I initially use OLS regressions to estimate the model. I estimate two models: one with health spending and consumption allocation with no controls and one with the full set of controls.

Using a corner solution model

I selected the Tobit model because of its well-known theoretical properties and popular use for circumventing the zero-expenditure problem in practice (McCracken and Brandt, 1987; Nayga, 1995; Abdel-Ghany and Sharpe, 1997; Cameron and Trivedi, 2009).

Specification of the Tobit expenditure model

In 1958, James Tobin devised the Tobit as a hybrid of the probit model and multiple regression methods (Tobin, 1958, p.25). The estimation of the Tobit model is based on the idea of 'censoring' (Cameron and Trivedi, 2009: p. 535). I explain below.

Suppose that this study's expenditure data consists of (y_i^*, x_i), and $i = 1, \ldots, N$. x_i is assumed to be fully observed. The latent variable, y_i^*, is not always known – some of these are zeros. I can assume that the household has an expenditure which is not expressed (hence the term 'latent') and only a pre-defined constant is known. Additionally, γ is surpassed at ($y_i^* > \gamma$). This study's zero expenditure values can then be described to be 'left-censored' if ($y_i^* \leq \gamma$), ensuring that both censored and uncensored observations are included in this study's observed

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[37] There were only 10 cases of individuals reporting having health insurance. This small sample size could be one reason why the model became unstable as there were insufficient observations. I therefore exclude this variable from the model.

sample. The key assumption of the Tobit model is that some of the observations must be censored; otherwise yi* = xi, which would be a linear regression (Maddala, 1992: p. 341).

This study's standard Tobit regression is given by the following:

$$y_i^* = x_i'\beta + \varepsilon_i, i = 1 \dots N, \epsilon \sim N(0, \sigma) \text{ and}$$

x_i denotes (kx1)vector of exogenously determined regressors in the observed sample

y_i^* is the unobserved latent variable. This study's observed variable, yi, is the observed independent variable (noncensored observations). This can be denoted as follows:

$$y = \begin{cases} y^* \text{ if } y^* > \gamma \\ \gamma \text{ if } y^* \leq \gamma \end{cases}.$$

This study's expected value for y is given by the following expression:

$$E(yi|xi, yi > \gamma) = x'\beta + \sigma + \frac{\emptyset\{x'\beta - \gamma/\sigma\}}{\Phi\{\gamma - x'\beta/\sigma\}} \dots, \ \epsilon \sim N(0, \sigma).$$

I can summarise equation (1) using the standard Tobit regression in (2):

$$\lfloor Ci = \alpha + x_i'\beta + \mu \quad \text{if } C_i > 0 \rfloor$$

$$[Ci = 0 \quad \text{if } C\_(i) \leq 0]$$

The Stata command **tobit|variable name|, LL(0)** is used to estimate the tobit expenditure regressions using the maximum likelihood method in Stata version 13.

The Tobit model is used to estimate the effects of sociodemographic variables on various expenditure categories, controlling for the bias and estimation problems due to the presence of a large number of zeros for the expenditure data, especially when this is broken down into categories. This is consistent with the dictates of neoclassical consumer theory; if households have differing tastes and preferences, then it is to be expected that they will purchase certain goods more than others and some goods may not be purchased at all.

Table 7-2 and Table 7-3 shows the results of the Tobit expenditure regressions, with and without controlling for endogeneity. Parameter estimates are estimated using the conventional maximum likelihood method. The correlation coefficients are interpreted differently from the OLS estimates. In the Tobit models, the direction of the coefficients is interpreted and not the magnitude, although there are instances where OLS estimates and Tobit estimates converge and there are no differences. Using field data, Wilson and Tisdell (2002) find that Tobit estimates are superior to OLS when the data is censored; yet, as the number of zeros decreases, there are no differences between the OLS estimates and Tobit estimates, in which case the OLS estimates can be substituted for the Tobit model.

Column (1) and (2) are the OLS estimates without and with controls respectively. Robust standard errors are in parentheses, and Column (3) and (4) are the Tobit model estimates without and with controls respectively. As I earlier noted, OLS estimates can be used instead of Tobit estimates in cases where they converge (Wilson and Tisdell, 2002). Given the convergence of both the OLS and Tobit estimates, I use the OLS estimates. As I mentioned above, the inclusion of the controls was to ensure that I have a correctly specified model.

Table 7-2 OLS and Tobit models of economic vulnerability and health expenditure – without controlling for endogeneity

DV= Log of health expenditure per capita	(1)OLS		(2)OLS		(3)Tobit		(4) Tobit	
Variables	β	SE	β	SE	β	SE	β	SE
Consumption per capita	0.926***	(0.062)	0.829***	(0.108)	0.926***	(0.056)	0.829***	(0.105)
Intercept	-3.691***	(0.691)	-0.934	(1.463)	-3.691***	(0.635)	-0.934	(1.481)
N	446		187		446		187	
R-square	0.383		0.494					
Pseudo R-square					0.134		0.187	
Model p-value	0.000		0.000		0.000		0.000	
F	225.850		16.651					
Chi-square					215.069		127.533	

Note: Standard errors in parentheses. Economic Vulnerability Measure = Log of Consumption per capita. Column (1) and Column (3) were estimated without controls.
Control variables include: age, region, gender, marital status, occupation, housing tenure, household composition, ADL (functional limitations).
[+]p<0.10 indicates significance at the 10% level * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

Table 7-3 OLS and Tobit models of economic vulnerability and health expenditure – after controlling for endogeneity

DV= Log of health expenditure per capita	(1)OLS		(2)OLS		(3)Tobit		(4) Tobit	
Variables	β	SE	β	SE	β	SE	β	SE
Consumption per capita (adjusted)	0.327***	(0.087)	0.418***	(0.119)	0.327***	(0.091)	0.418***	(0.114)
Intercept	3.169**	(0.977)	4.540**	(1.486)	1.443***	(0.048)	1.191***	(0.062)
N	446		187		446		187	
R-square	0.028		0.372					
Pseudo R-square					0.008		0.127	
Model p-value	0.000		0.000		0.000		0.000	
F	14.144		5.312					
Chi-square					12.791		86.891	

Note: Standard errors in parentheses. Economic Vulnerability Measure = Log of Consumption per capita. Column (1) and Column (3) were estimated without controls.
Control variables include: age, region, gender, marital status, occupation, housing tenure, household composition, ADL (functional limitations).
[+]p<0.10 indicates significance at the 10% level * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

Using the NGHPS 2010, I investigated the empirical association of consumption allocation and health spending, with or without socio-economic and demographic factors. I estimated the health spending-consumption allocation equation using OLS and Tobit model. This study's main explanatory variable is the welfare measure — consumption per capita, and the dependent variable is health spending. Both variables are continuous variables and have been specified in their logarithmic form. As in the health status-consumption allocation analysis in this study's previous section, I focused primarily on the association between both variables. Also, in this section I reflect on the counter-intuitive evidence of some of the household fixed effects. All the other control variables have been specified to control for unobserved heterogeneity.

I excluded household size due to its high correlation with consumption per capita. With respect to the other variables, although they may be correlated with each other, multi-collinearity is not harmful. The test for multicollinearity was used using ESTAT VIF for the OLS regression, and I arrived at 2.48. The rule of thumb is that this estimate be less than 10. This study's tests for multi-collinearity results in Table 7-4 and Table 7-5 reveal that the models have weak multi-collinearity and that if there is an omitted variable bias, it is not harmful.

Table 7-4 Diagnostic testing of the reduced form OLS regressions on OOP per capita for urban elderly households in Nigeria

DV= Log OOP health payments per capita	
Test statistics (k)	OLS regression
Multi-collinearity:	
Variance Inflation Factor (VIF) test	2.53
Specification test (Ramsey's RESET test)	2.19 (p value = 0.089)

* p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

Table 7-5 Diagnostic testing of reduced form OLS regressions on health per capita for urban elderly households in Nigeria

DV= Log health expenditure per capita	
Test statistics (k)	OLS regression
Multi-collinearity:	
Variance Inflation Factor (VIF) test	2.43
Specification test (Ramsey's RESET test)	1.38 (p value = 0.2496)

* p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%
Source: NGHPS 2010

I also note that the loss of a small sample size in this study's analysis, especially when I use the full set of controls, is remarkable, although in Column (1) and Column (3) where I specify no controls, the relationship is consistent and positive. Even with the full controls, the association between consumption allocation and health spending is statistically significant. Sample size requirements for ML models like this study's Tobit are unresolved in the literature. Econometricians have typically dismissed the sample size issue on the strength of the asymptotic qualities of ML models (Greene, 1995). Other applied researchers have made specific recommendations in their studies. Eliason has recommended that a sample size of more than 60 should be adequate (Eliason, 1993). Hart and Clark found that problems of inference begin to occur when the number of cases is less than 30, and in another study by the same authors, a sample size of 200, produced consistent estimates for a probit model (Hart and Clark, 1999). Therefore, it is my belief that this study's sample size of 446 households is adequate for the requirements of the model. When I use the full set of controls, I find that the number of observations drops to 187. Based on Hart and Clark and Eliason, the estimates should be unbiased. Based on the large standard errors for some of the control variables, I am sceptical about the explanatory power of the model when I include the full set of controls following Anderson's behavioural model. The bivariate version of the models in Column (1) and Column (3) are much better at explaining the association between both dependent and independent variables in this study. Based on the estimated coefficients, one main finding that has emerged

is that the consumption allocation welfare measure is positively associated with health spending; therefore, I interpret the coefficients of this study's proxy to mean those that are economically vulnerable are more likely to have lower health spending because they are simply too economically disadvantaged to afford health services.

Studies have shown that this is typically true for poorer elderly households in Nigeria. Those with low financial resources prematurely discharge themselves from impatient health care (Sanya et al., 2008). Nigeria's health system is characterised by a regressive nature of charging fees. Both rich and poor households pay the same amount for health care regardless of one's background. The implication of this finding is that being economically vulnerable is bad for health because it affects levels of out-of-pocket payments available for maintaining and repairing health.

This study's household fixed effects revealed some counterintuitive evidence. Education is negatively associated with health spending in all educational attainment categories. The difference was significant between those that have secondary education and no education, at the 5% significance level. Clearly, the more education one attains the more likely that one spends on health, but beyond secondary school level, any education benefits disappear. In some settings, it has been found that those who are educated are likely to have higher levels of health spending because they invest more in their health. This is also in line with Grossman's theoretical model. It may also be that more educated households are not efficient in their use of modern medicine, weakening any positive education effects. Another explanation for the negative relationship of education with health spending may be that the education of household heads does not significantly explain how the allocation resources towards health and health spending decisions may be based on other household behaviour such as the gender of the household head and whether one is married or not, both of which are significant as controls in the model.

Being a male head did not significantly impact health spending. This is not too surprising as women are known to use healthcare services more as they age compared to their male counterparts (Case and Deaton, 2005b). The age variable was not statistically significant, but, the sign changes from negative to positive as one moves from lower age categories to more advanced ages. In Chapter 4, I discussed the role of gender in explaining differences in health care use, and by extension health spending— through health care payments. I am mindful that health spending may not perfectly reflect health care use as it could be that women have a preference for modernised health facilities and are prepared to pay more to use more expensive hospitals, which could explain why the data shows a higher health spending for women than men. Without long-term data on health care utilisation patterns, it would be difficult to confirm

these gender effects health spending. Nonetheless, these gender effects confirm the merit of controlling for the variable in the model.

In Section 4.6, I already discussed the trade-off between selecting and omitting variables based solely on statistical significance, and that getting the balance wrong can lead to significant challenges. I am satisfied that the model was correctly specified, hence, the concern is less about the statistical significance of the controls in this chapter.

However, one finding which warrants a brief discussion is that less-controversial controls such as ADL limitations of the household head and household composition were insignificant in the model. The ample theoretical and empirical studies discussed in Chapter 2, suggest that when an older person is ill, this often leads to significantly high amounts of spending. Therefore, the more limitations one has, the more one would need to spend to be in good health. There are of course other reasons why this direct effect may not always be observed. One explanation is the issue of reliability of self-reported measures which I discussed in Section 4.5 as a limitation of using secondary data, because there is no control on the data collection process. I reflect further on this issue in Chapter 8. With respect to the household composition, having more working age adults and children did not significantly affect health spending. Given that the health spending variable have been expressed in per capita terms, any intra-household differences in health expenditure are likely to be less pronounced.

From the model, I have examined the effects of consumption allocation on household health spending amongst elderly households to identify those elderly households that are likely to suffer more economically than others. In the next section, I follow the same approach to examine direct out-of-pocket health payments and consumption allocation. Household health expenditure may be spending that is not on formal medical care. From the NGHPS, I find that out-of-pocket (OOP) health payments or OOP payments for short have been collected for every individual of the household based on hospitalisation costs and prescription costs. Therefore, this study's aim is to examine if the effects of the consumption allocation welfare measure observed with health spending remain consistent with OOP payments. I utilise the same methodology used so far in this part of the analysis. To arrive at OOP payments for the household, I add the OOP across each member of the household and assign this to the head of the household, after adjusting for household size. This study's OOP payment per capita is the main dependent variable in this section. Table 7-6 presents the results from the OLS and Tobit estimates. This section has to also be analysed on a household level as I encountered the same issues with income and OOP payments on an individual analysis as I did in the health status analysis section of this chapter.

Table 7-6 OLS and Tobit models of economic vulnerability and out-of-pocket health payments

DV= log of out-of-pocket health payments per capita	(1)OLS		(2)OLS		(3)Tobit		(4)Tobit	
	β	SE	β	SE	β	SE	β	SE
Variables								
Log of consumption per capita	0.357***	(0.069)	0.042	(0.105)	0.357***	(0.061)	0.042	(0.104)
Intercept	3.167***	(0.775)	6.959***	(1.413)	3.167***	(0.690)	6.959***	(1.431)
N	476		205		476		205	
R-square	0.066		0.296					
Pseudo R-sq					0.019		0.098	
Model p-value	0.000				0.000		0.000	
F	26.819		.					
Chi-square					32.673		72.022	

Note: Standard errors in parentheses. Column (1) and Column (3) were estimated without controls.

Control variables include: age, region, gender, marital status, occupation, housing tenure, household composition, ADL (functional limitations).

[+]p<0.10 indicates significance at the 10% level * p<0.05 indicates significance at the 5% level; ** p<0.01 at the 1% level; at *** p<0.001 at the 0.1%

Source: NGHPS 2010

Some interesting findings emerge. The consequences of being economically vulnerable on health remain strong and consistent in the out-of-pocket health payment OLS and Tobit model estimations. From Column (1), not being consumption allocation increases OOP payments by 36%, suggesting a positive relationship between both variables. Having less consumption allocation is likely to mean that households have less economic resources to devote to access formal health care. The extent to which these increases in health payments could lead to catastrophic health expenditure, which is bad for welfare, goes beyond the scope of this thesis, but has been addressed in another paper, using the same NGHPS data (Adisa, 2015).

It is clear from the findings that by distinguishing between formal health care spending (OOP payments) and all types of health spending (health expenditure), the control variables affect OOP payments much more than health spending. Although, this observed effect could be as a result of measurement bias. The OOP payments were collected on an individual level in the NGHPS, which I aggregated for this chapter (see Appendix B). The OOP payments were also collected based on the memory recall of individual's prescription and drug costs. One has no way of verifying the prescription and drug costs in the NGHPS, but the findings in the adjusted health spending (after controlling for endogeneity) and out-of-pocket health payments are similar, highlighting that if there is any measurement bias, it is likely to not be useful. The finding for the out-of-pocket health payments suggests that out-of-pocket health payments may likely not suffer from very harmful endogeneity compared to health expenditure, because it is generated differently from health expenditure in the NGHPS. I now go on to provide a conclusion and discussion on the overall findings in this chapter.

7.8   Discussion and Conclusion

In this chapter, I have examined the consequences of economic vulnerability on health, using the main consumption allocation measure and three health dimensions (health status, health expenditure, and OOP health payments), and cross-sectional household data from the NGHPS. I used a probit model to analyse the relationship between health status and consumption allocation, with and without controls. The combination of demographic and socio-economic control variables was identified based on Grossman's (1972) model and the static model extension suggested by (Muurinen, 1982). This study's tests of robustness revealed that all the variables were jointly significant, and multi-collinearity, if present, is not harmful based on the model converging at the fourth iteration. This chapter provides a unique contribution as the role of household expenditures on health status is often neglected in the literature (Hotchkiss et al., 1998). I found that consumption allocation is negatively related to the probability of reporting poor health status, which was significant at the 5% level. In other words, those that are more economically vulnerable (less consumption allocation) in urban Nigeria are more likely to report a poorer health status.

In the second part of the analysis, I examined the empirical associations of health spending and consumption allocation, and OOP health payments and consumption allocation. OOP health payments comprised of aggregated hospitalisation costs and prescription costs, as reported in the NGHPS. For the health spending and OOP health payment models, I controlled for unobserved heterogeneity by selecting demographic and socio-economic variables, in line with the Andersen's model (Andersen, 1968). I also adjusted the health expenditure variable to control for potential endogeneity as much as possible. I estimated the models with and without the controls using OLS and Tobit. Tests of robustness for the OLS reveal no omitted variable bias and low multicollinearity, although I find that for both this study's OLS and Tobit, the estimates tend to be similar by estimating robust standard errors for the OLS. The OLS regression model produced less biased estimates, similar to that of the Tobit model. Still, the small sample size which remains after controlling for unobserved heterogeneity may limit the extent to which one can generalise from the results about all urban elderly households.

The presence of health spending in the NGHPS has revealed that elderly household have used health services during the survey period; and while it does not tell us the quality, quantity and prices of health services, the findings in this chapter address the gap in the literature in linking health expenditure to consumption allocation, especially where good quality health care

utilisation data is not readily available. I have earlier noted in previous chapters of this thesis the evidence from the literature in Nigeria, which suggests that the costs of old-age diseases are placing a high economic burden on household budgets—particularly among the poor. Unfortunately, the estimated cost burden of illness on Nigerian households is still largely unknown, as well as its effects. The findings in this chapter suggest that there is a strong link between consumption allocation, health status, and health spending/OOP payments, in line with the findings in the literature (Hotchkiss et al., 1998;Lawson, 2004;Brinda et al., 2012). Therefore, a household that is economically vulnerable is likely to be worse-off because there are limited resources to spend on health. In the same vein, a lack of investment in one's health is also likely to lead in poorer health status, compared to those with access to more consumption allocations.

The literature that examines determinants of health spending and OOP payments has highlighted the role that economic resources play in identifying health inequities. This study's findings contribute to the literature that examines the associated effects of economic welfare on health dimensions. The positive relationship of consumption allocation and health status, and consumption allocation and health spending reveals that policy makers may be able to address inequities in health, brought on by lack of economic resources, by supporting household budgets of elderly households. The policy implications of the findings are discussed in the following chapter, which concludes the thesis.

8. Concluding Remarks

In a context of high urban poverty rates and minimal social security arrangements for elderly people[38], economic vulnerability among older people and their households abounds in Urban Nigeria. However, the extent to which economic vulnerability affects urban elderly households differs based on the socio-economic and demographic advantages, possessed by some (and not all) urban elderly households. This stance challenges the dominant advocacy arguments put forward by the UN and HAI, which tends to ignore this heterogeneity of older groups in SSA, by assigning a 'vulnerability tag' to all older people in SSA.

Thus, to address these issues within one urban SSA context, this study has examined economic vulnerability and its consequences amongst elderly Nigerians in Nigeria using the NGHPS 2010 dataset. This study has drawn on concepts in economics/development studies, gerontology, and sociology. Its main research questions were the following: One, which determinants influence economic vulnerability, through consumption allocation? Two, as a consequence, does economic vulnerability (through consumption allocation) directly influence health spending and health status? The study's main concept is economic vulnerability, which is represented by a consumption allocation welfare measure—consumption per capita. This study has generated useful evidence on the key drivers of economic vulnerability and its links to health—to my knowledge, it is a research enterprise that has not been embarked upon previously in the Nigerian or West African literature on older people.

In one respect, I found that by directly modelling consumption expenditure as the welfare measure of economic vulnerability, I have been able to circumvent the arbitrariness which simple poverty concerns and/or equivalence scale measures are known for. Nonetheless, conceptualising economic vulnerability in this way for urban elderly households and using a cross-sectional research design has not been without its own challenges. I reflect on some of these limitations and policy implications in later sections of this chapter.

The study took an urban focus throughout. For contextual accuracy, the old-age starting point used for urban elderly Nigerians was 50 years old and above. Where relevant, I compared elderly groups with its non-elderly counterparts in urban Nigeria and with urban elderly groups historically, using the NGHPS and NLSS 2004 dataset. I found strong evidence to support the suitability of the NGHPS in providing good quality secondary data. From the NGHPS, this study found that compared to non-elderly households, elderly households are disadvantaged in

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[38] Majority of urban elderly Nigerians are poor based on the official definition of poverty and the World Bank's $1.25 per day poverty lines, and less than 1% of urban elderly Nigerians reported pensions as a source of income.

terms of levels of income earnings, and they were less likely to have a second job. On the other hand, elderly households had higher levels of rental income generated from home ownership. Yet, owning a home did not directly influence economic vulnerability of urban elderly Nigerians in line with economic theory. These datasets enabled a thorough examination of the varied explanations influencing economic vulnerability among urban elderly Nigerians. The process of examining the NGHPS also revealed its limitations.

The first premise of this thesis has been that elderly groups are to some extent heterogenous in being economically vulnerable, and that this heterogeneity can be examined through the relationships between certain key demographic and socio-economic factors and consumption allocation. By doing so, I determined why some elderly are likely to be more economically vulnerable than others in Nigeria. The second premise is that health-related consequences of economic vulnerability can be examined through consumption allocation and health dimensions.

Throughout the thesis, I have emphasised that the observed effects in this study are empirical associations rather than causal links. This distinction is an important feature of the thesis and has informed some of the highlighted future areas of research discussed later on in this chapter. A range of policy recommendations for protecting older people who are more likely to be economically vulnerable are discussed in this chapter. I begin with a brief overview of all the chapters.

8.1 Overview of the Chapters

Chapter 1 of the thesis provided the background, setting, and rationale for the research. The chapter presented the dominant concerns in the ageing field in developing countries, perpetuated by two main international institutions: the United Nations and HelpAge International. As a backdrop, the chapter presented the key developments that have helped propel older people as a vulnerable group in much of SSA, and in other countries of the South. The establishment of the UN's ageing policy frameworks in the 1980s and subsequently in 2002 were identified as the most widely implemented ageing policy frameworks in SSA. I discussed some of the criticisms of levelled against these dominant international institutions by two prominent African gerontologists. These criticisms are mainly against the 1982 policy frameworks and its impact on the studies that followed in SSA. For instance, in 1982, the ageing policy framework that resulted was based on a human rights framework entitled, *The UN Principles of Older Persons,* which was underpinned by the modernisation theory in spite of growing evidence in the Western literature that this theory was deficient. The chapter situated the study within the African gerontological literature and wider social gerontological literature.

Within the wider social gerontological literature, the chapter presented the main concerns highlighted by Johnson et al. (2005a) regarding the reluctance of researchers to incorporate cross-disciplinary perspectives, which has slowed the growth of gerontology in general. The chapter went on to discuss the rationale and significance for a cross-disciplinary urban elderly study and why Nigeria is an interesting case study. Nigeria is a classic example of a country that has been influenced by dominant international concerns on development. When considered together, the weakness and knowledge gaps in the African literature and the advocacy-oriented literature provided a strong impetus for this thesis. The chapter highlighted the gaps in our understanding of the economic welfare of older people in Sub-Saharan African and concluded with a structure for the rest of the thesis.

Chapter 2 reviewed the various conceptualisations of economic vulnerability with special focus on applications of vulnerability and economic vulnerability to individuals and groups. The review was done using a scoping review introduced by Arksey and O'Malley (2005). The chapter restricted the discussion to the three disciplines relevant to this study: gerontology, sociology, and economics/development studies. The chapter discussed the efforts by researchers to conceptualise vulnerability and to distinguish it from poverty studies. It went on to highlight the lack of a universal definition of vulnerability in the literature as well as the dominance of

economic vulnerability concerns in the field of economics and its sub-discipline, development studies.

The chapter went on to address three questions: One, how can economic vulnerability be defined and measured? ; Two, Why are some older people economically vulnerable than others? Three, can health be linked to economic vulnerability, and how might this link be examined? I highlighted the shortcomings and advantages of adopting a framework to examine economic vulnerability among older groups. Assets may be useful in measuring economic vulnerability in affluent societies, in developing countries, availability of data and the presence of functional markets limit the usefulness of such frameworks in the study of urban elderly Nigerians. I found that from the literature, the most appropriate measure for economic vulnerability was consumption expenditure.

With respect to linking health to economic vulnerability, I observed that health can be linked to economic vulnerability, both theoretically and empirically. I discussed Grossman's (1972) model, which is the most common theoretical basis for most applied econometric work on health. The chapter also highlighted some methodological issues concerning the reliability and validity of self-reported health measures plagues most studies, and its reliability can be examined statistically. There is a consensus that the income-health relationship is complex. Cross-sectional data can be utilised to examine health status and income effects just as longitudinal data enables a deeper analysis over the life-cycle. This chapter also discussed the debate about the old-age starting point of 50 years and above within African contexts.

Chapter 3 entrenched the study within the broader Nigerian policy context. The chapter briefly discussed the historical developments of policy making in Nigeria and the dominant international influences that have influenced its shape. Poverty alleviation efforts were discussed to examine its implications for reducing economic vulnerability of older people from a political economy of ageing perspective. It discussed the National Policy Ageing, which is in draft form at the time of writing this thesis. It went on to identify the conundrums in the policy environment in Nigeria which may impede the implementation and success of the ageing policy in Nigeria. The chapter provided a useful context and presented the parameters underpinning some of the policy recommendations in this chapter.

Chapter 4 extensively discussed the NGHPS including its strengths and weaknesses. It also described the main methods and procedures adopted in the main empirical chapters of the thesis in Chapter 6 and 7. The chapter presented details of how the data was extracted from the dataset and the initial preliminary analysis that was undertaken in identifying useful variables to address the research questions. The use of consumption to operationalise economic

vulnerability was discussed extensively, including its strengths and weaknesses. The rationale for using per capita terms to adjust for household size rather than equivalence scales which attempt to arbitrarily control for intra-household inequalities was also discussed. The latter method is in line with the vast intra-household literature and is more realistic because resources may not be equally shared amongst household members—an idea that was first introduced by Rothbarth (1943) and then developed by Deaton and Muellbauer (1986);Haddad and Reardon (1993);Deaton (1989), and Deaton and Paxson (1995), to name a few. The former method was identified as a more suitable approach given the inconsistent evidence I found on age bias among urban elderly households in Nigeria.

The chapter also discussed the selection of the self-reported health statuses of elderly Nigerians (ADL_p measure). Additionally, the chapter calibrated the health status measure and found it to be sound. Generally, elderly people were very optimistic about their health status with a relatively small number self-reporting functional limitations. When elderly Nigerians report ADL limitations, I find that between 2 to 3 percent of urban elderly Nigerians report between 1 to 5 functional limitations.

The chapter presented a detailed overview of elderly Nigerians using individual-level data from the NGHPS and a selection of demographic and socio-economic characteristics. The chapter used simple bivariate regressions, chi-square statistics, and descriptive statistics to profile urban elderly Nigerians and to examine the scope of the NGHPS. The findings revealed strong educational and occupational differences in work status. Working in manual occupations such as agriculture and self-employment was welfare-reducing compared to professional occupations. Survey evidence that some elderly remain in the labour force even into advanced older ages was also discussed. The chapter drew on qualitative accounts in the NGPHPS, and it found that being old was the least likely to be a reason why elderly people were not actively seeking work in Nigeria. Some of the findings were surprising, for example, more than 70% of urban elderly Nigerians not working stated that they were studying. This aspect of the NGHPS could not be verified, and it has an implication for the use of the NGHPS in future research.

Chapter 5 identified the immediate socio-economic determinants on a household level. The findings in Chapter 5 laid the foundations for the empirical analysis in Chapter 6 through a detailed exploration of possible underlying determinants at the household level, which are likely to influence economic vulnerability based on the literature. The exploration in Chapter 5 examined the income sources of elderly households, wherein I found similar patterns in consumption and household income earnings.

The chapter found household poverty to be highly endogenous to consumption allocation for urban elderly households. I found high levels of poverty amongst urban elderly households using two poverty lines. The chapter found that urban elderly households with older household heads were worse off than their younger-old counterparts, holding all other factors constant. The result of this test is hardly surprising as poverty and economic vulnerability are likely to be related to each other, and poverty has been known to be sensitive to age. This simple test demonstrated that the main dependent variable, consumption allocation, is a strong welfare measure for examining economic vulnerability among urban elderly households.

Other immediate determinants were identified as follows: household size, household structure, and household composition. The chapter further examined the effect of housing choices as a potential determinant of economic vulnerability. The finding did not reveal any special advantages to owning a home. One reason may be that the underdevelopment of the housing markets may be having an impact on any economic benefits of owning a home amongst the elderly (Chapter 3). Having free authorised housing through employers or by the government was found to be more beneficial to urban elderly households.

Chapter 6 presented the consumption model to examine the determinants of economic vulnerability. Consumption allocation is specified as a function of certain socio-demographic and socio-economic variables from which one can understand why some older people are more economically vulnerable than others. This chapter formalised the expectations of the relationship between the socio-economic factors and demographic factors that affect economic vulnerability amongst elderly Nigerians, with guidance from the theoretical and empirical literature and the findings in Chapter 4 and 5. The model of economic vulnerability was estimated using OLS and quantile analysis to examine patterns across both estimation methods. In particular, the quantile analysis has the advantage of allowing an examination of the relationships at various points in the distribution. The main determinants were found to be: age of household head, household size, household structure, and regional location. The chapter presented robustness test results for both estimations. Interestingly, the educational and occupational advantages which were revealed in Chapter 4 on an individual level were found to not be consistent at the household level.

Chapter 7 examined the possible health-related consequences of economic vulnerability, using the consumption allocation welfare measure. It addressed the second research question of the study: does economic vulnerability (through consumption allocation) affect the levels of health status and health spending for elderly households? The empirical analysis was divided into three parts: health status and consumption allocation; health expenditure and consumption allocation; OOP payments and consumption allocation. I then investigated the relationship

between economic vulnerability and health status using Grossman's (1972) model and the static extensions in (Muurinen, 1982). Given the dichotomous health status variable, I estimated the model using probit models.

In the second part of the chapter, I examined household health expenditure and out-of-pocket health payments. Consumer demand theory was the underlying theoretical model. I used Andersen's (1968) behavioural model to identify possible socio-economic and demographic factors that need to be controlled for in the model. The chapter highlighted the importance of using total health expenditure as it captures all types of health spending, while OOP health payments measures formal health care spending. Also, age and other socio-economic factors were controlled for in line with theory. I also controlled for potential endogeneity bias in the health expenditure model with guidance from the empirical literature.

The chapter then went on to estimate the health expenditure and OOP health payment models by using OLS and Tobit analysis. This chapter presented useful findings that are relevant to current policy debates regarding the equity of health amongst vulnerable older groups in developing countries. The chapter discussed the relevant theoretical and empirical literature to guide expectations of hypothesised relationships between the health variables and economic vulnerability. It also presented strong evidence on the association of the main welfare measure, consumption allocation, with health status and health spending, suggesting that economic resources is likely to be a strong determinant of health inequalities among older people in urban Nigeria. Overall, this thesis offers a unique contribution to the literature. In the next section, I discuss the study's main contributions to the related literature.

8.2   Contributions to the Literature

The main objectives of this thesis have been two-fold: 1) to provide survey evidence on the economic vulnerability among urban elderly Nigerians. It cannot be disputed that most studies on poverty or economically vulnerable groups in Nigeria have primarily being on those in rural areas. In Chapter 1, I highlighted that there is a need to understand the welfare situation of older urban residents within a Nigerian context. Evidence from the NGHPS revealed that majority of urban elderly Nigerians are poor based on the official definition of poverty in Nigeria, and the World Bank's \$1.25 per day poverty lines, they have no or limited access to pensions, and most work in manual occupations. This study is timely in how it makes a strong case for urban older people in Nigeria, by providing an empirical cross-disciplinary study that focuses on their economic welfare.

The finding in this study challenges two persisting notions in the literature: Firstly, commentaries on older peoples in Sub-Saharan Africa have tended to be based on the notion of retirement ages of 60 or 65 years. In this thesis, I have demonstrated that reducing the starting point of old-age to include those that are 50 years and above is more representative of the Nigerian situation, and should be taken into consideration in designing policies for elderly Nigerians. Secondly, studies on elderly people in Nigeria and West Africa have tended to assume a level of economic dependence that is rarely ever empirically tested. The main argument of these studies is that majority of elderly people depend on their family for care and financial support, and they are increasingly becoming vulnerable due to declining support from family members. This thesis asserts that it is important to acknowledge the contributions of urban elderly Nigerians to their households. The findings in Chapter 4 have demonstrated that elderly people contribute economically to their households in tangible ways, which can clearly be examined empirically. In Chapter 4, I found that some elderly people generate income and are reasonably educated, up to the primary and secondary levels. Self-employment and urban agriculture are the biggest employers of older people. This finding provides an avenue for future research work and policy. I further discuss these points later on in the text.

The thesis is the first empirical examination of the determinants and consequences of economic vulnerability through consumption allocation, amongst urban elderly Nigerians. It contributes to the literature the key socio-economic factors that influence welfare measures amongst the urban elderly, as well as the health-related consequences of economic vulnerability. This enquiry is pertinent because it contributes to current debates about the welfare of the elderly in Africa.

This thesis has provided empirical evidence with potential policy implications for urban elderly Nigerians. Globally, many countries have made significant progress in tackling economic vulnerability amongst its elderly citizens, since the Madrid Plan was signed by over 150 countries including Nigeria. Yet, Nigeria is significantly lacking in progress in ensuring the economic welfare of elderly Nigerians. Given the provisions of the National Policy on Ageing, the findings in this thesis can provide prior guidance on the diversity of urban elderly Nigerians and key welfare pressure points. To date, commentaries on the vulnerability on elderly people by the dominant international institutions have assumed that older people in SSA are a homogenous group. This study's findings challenge this dominant view. Findings in the African literature on older people in Nigeria and West Africa have tended to focus on socio-cultural narratives, which are often easily dismissed by policy makers due to the relative small sample sizes and lack of national representativeness to inform policy. This thesis has utilised a nationally representative household survey—the NGHPS 2010—to empirically investigate economic vulnerability amongst elderly Nigerians, which should aid in understanding the socio-economic welfare of a larger group of elderly Nigerians. In Chapter 3, this thesis has contributed a critique of the policy context that inhibits the implementation of the National Policy on Ageing in Nigeria from a political economy perspective.

This thesis is unique in the sense that I draw on related academic studies in identifying the immediate determinants. In various sections of this thesis, I have demonstrated the link between health outcomes and consumption allocation in Nigeria. In Chapter 7, I examined the link empirically. This chapter will be of interest to public health researchers and health policy makers who are interested in the association between economic resources and health outcomes. Given that most of the empirical studies that examine the health status of elderly people are primarily focused on South Africa, this thesis is a welcome addition to the literature. The application of Grossman's (1972) model and Andersen's (1968) model to an African context and using a unique dataset is likely to appeal to applied health economists.

More importantly, I have utilised a recent household dataset, demonstrating that to an extent, secondary sources can be used to study elderly people in African contexts. The weaknesses of the NGHPS which this thesis has highlighted also offer lessons for future applications and expansion of the dataset by the World Bank and NBS. To my knowledge, this is the first study to use the NGHPS data in academic research. The NGHPS is a recent nationally representative survey that collected rich and detailed information on households, providing useful information at the individual and household levels. The study found low-levels of self-reports on health among urban elderly Nigerians which may be indicative of reporting bias rather than a high prevalence of optimism among urban elderly Nigerians regarding their health status. Care

should be taken in future rounds of the data collection process of the NGHPS to verify the low-levels of self-reports of functional limitations among the elderly. I return to this issue in making policy recommendations.

As a by-product of the thesis, I have been able to empirically demonstrate that intra-household allocations (IRA) based on Deaton's demographic seperability (or adult goods method) were unsuitable for studying elderly households' welfare in Nigeria, compared to the unitary household model. This study attempted to demographically separate adult goods to identify age bias within households. These modelling challenges may be of interest to applied researchers who are interested in using such IRA methods in Nigeria and the NGHPS to identify age discrimination within elderly households. Clearly, more research is needed in this area. With multi-year data, there may be scope to draw on bargaining power models to identify the access that elderly people have to household resources (see Doss, 2013 for a review). I further reflect on this research gap in Section 8.3.

8.3 Empirical Evidence, Policy Implications, Study Limitations, and Gaps

In this section, I highlight the broad and specific policy implications of this study's main research findings. Although the findings I present here are based on urban elderly Nigerians, some of the areas of policy intervention may also be relevant to rural elderly Nigerians, as the pro-market regime in Nigeria, which gives less consideration to the conditions of older people by policymakers, affects all elderly Nigerians. Based on the findings in this thesis on the diversity of urban elderly Nigerians, older groups would require different policy responses to ensure their economic welfare. I go on to discuss my recommendations in Section 8.3.3.

The main empirical chapters of thesis have addressed the two main primary questions of the study (Chapter 6 and 7). Using consumption allocation as the main welfare measure, I have identified key determinants of economic vulnerability as age of household head, household size, household structure, location, and occupation. In relation to health, the strong association of health outcomes to the welfare measure of consumption allocation among elderly households and the evidence in the literature suggests that health disparities among urban elderly Nigerians may be addressed by improving the drain of health payments on the economic resources of urban elderly households. For example, public health infrastructure should work to promote the health stock of older people but, more importantly, strengthen universal health coverage to urban elderly Nigerians. Other pertinent findings from Chapter 4 and 5, reveal that many elderly people participate in self-employment, while those who are highly educated may have a better chance of securing an income in the formal sector in old-age going by the sensitivity of education to formal wage earnings.

This section is primarily concerned with specific policy proposals that are necessary to reduce the impact of the key drivers of economic vulnerability amongst the elderly and their households in Nigeria. The proposals are based on the consistent and valid associations observed in the study. It is this study's belief that the proposal would help improve the welfare conditions of elderly Nigerians. I also draw one of the strengths of the study to encourage the use of consumption allocation models to directly identify other economically vulnerable groups in Nigeria. I urge the government to commission new research at a national level on economically vulnerable elderly groups beyond the usual static poverty analysis that is often the norm and rarely identifies the inequalities among older people. The lessons learnt from the

examination of the NGHPS in Chapter 4 have been drawn upon here to highlight the policy implications.

8.3.1 Extending Research on the Economic Welfare of Elderly Nigerians

In Chapter 3, I discussed the practice of estimating national poverty measures to alleviate poverty in Nigeria, which has been entrenched by dominant international financial institutions such as the World Bank. Policymakers in Nigeria have tended to cite these estimates as a basis for the formulation of blanket anti-poverty reduction programmes, which fail to highlight the differing needs of older groups. By extending this study's concerns beyond mere poverty estimations, I have been able to apply a consumption allocation welfare measure to understand why some older groups are more likely to be more economically vulnerable than others. This enquiry can be extended to rural elderly Nigerians using the same approach in this study.

Furthermore, by avoiding threshold measures that measure economic vulnerability based on whether they fall below and above a certain probability threshold, I have been able to avoid the risk of prediction errors highlighted by studies reviewed in Chapter 2. My study provides confirmatory evidence that modelling consumption directly can help identify which older people are likely to be more economically vulnerable. This approach provides a less arbitrary approach to investigating household welfare (Deaton, 1992, 1997;O'Donnell et al., 2005;Appleton, 2001). In some contexts, it may be viewed as unconventional to model consumption directly to examine economic vulnerability and its determinants but this study adds strong evidence to the literature on its merits.

The study also used a specific-to-general empirical modelling strategy (Chapter 4), which made it easier to develop a robust model from different aspects of the data, and with guidance from the theoretical and empirical literature. Because there is so much we do not know about the economic welfare of urban elderly Nigerians which the literature may not be able to provide guidance on, progressively building a model in this way is a more superior approach than using the general-to-specific modelling strategy.

I have successfully examined the economic welfare of urban elderly and their households using a recently published rich secondary data source, the NGHPS. This is an exercise that has never been undertaken before. It is my belief that maximising available secondary data sources in this way would engender more research to fill the information gap on elderly Nigerians in the literature, thereby providing a larger body of evidence for policymakers to draw from in Nigeria.

8.3.2 Policy Implications of Using the NGHPS 2010

Household surveys are an inexpensive way to examine vulnerable groups. I highlight that the NGHPS is a rich and detailed information source that has unending possibilities as well as limitations. As this study evidences, the use of the NGHPS can enable useful analysis of economic vulnerability amongst elderly Nigerians. As I discussed in Chapter 4, I have utilised the first wave of the data in this study, and at the time of writing, the second wave has just been released by the World Bank. This availability of data lays a useful foundation for the examination of the other dimensions of economic vulnerability and other possible consequences of economic vulnerability. For example, food security issues may be important. This study has demonstrated that timely and cross-disciplinary research can be undertaken on older Nigerians—a necessary enterprise if the information gap on elderly Nigerians is to be narrowed. The availability of new waves of data in the NGHPS will engender a formal verification of the reliability of the self-reported health measures which remains unaddressed. Similarly, a significantly high proportion of urban elderly Nigerians not in work stated 'studying' as a barrier to work in the NGHPS. This aspect of the NGHPS needs to be further verified by the data supervisors of the NGHPS.

Having highlighted briefly the policy implications with respect to this study's quantitative approach, I discuss the areas of policy interventions in line with this study's findings.

8.3.3 Areas of Policy Intervention

Implementing the National Policy on Ageing

There is no doubt that the lofty goals articulated in the National Policy on Ageing, discussed in Chapter 3 of this thesis, would help reduce economic vulnerability amongst elderly people if successfully implemented within an enabling environment. The National Policy on Ageing is a robust policy because it covers multi-dimensional aspects of welfare. In the policy, the Nigerian government includes income security, health, and housing, which it describes as essential to the wellbeing of elderly people. It is reasonable to advocate that the government should stand by its stated commitments by ensuring that adequate funding is available upon implementation by planning beyond the short-term but effective monitoring mechanisms should be instituted to ensure that the minimum 3% percent of budget allocations, which it is to be earmarked specifically for the support of elderly people, is actually spent to meet the needs of elderly people.

This thesis holds that the success of the National Policy on Ageing depends on addressing the ambiguities and obstacles highlighted in Chapter 3, as well as setting its policy priorities. The chapter asserted that a political economy of ageing would need to be given greater attention by policymakers if it is to ensure the welfare of its elderly citizens. Given the resource constraints in Nigeria, the findings in the study indicate areas that the government should direct its attention.

This study has shown that some elderly people are more economically vulnerable than others, and these welfare differences can be explained by certain socio-economic and demographic factors. In the first instance, the focus should be on urban elderly Nigerians from the age of 50 and above; those living in the Northeast, Northwest, and Southeast areas of the country; those living in larger and more complex households; and those that are economically inactive. This study recommends that with proper planning, specific welfare programmes should be developed and managed at the national level for these groups.

Pension Reform and Cash Transfers

This study found that a neglible amount of older people reported pension income, suggesting that coverage is still very limited. Less than 1% report receiving pensions as a source of income (Chapter 4), suggesting that there is a need to incorporate other social protection schemes. Pensions are the most common method for reducing old-age economic insecurity (Casey, 2011;Phillipson and Dannefer, 2010). There are essentially two types of pensions: contributory and non-contributory pensions; the former refers to the contributions made during active work life which is drawn down during retirement years; non-contributory pensions are typically in the form of universal cash transfers which are automatically paid to a person by reason of age or disability regardless of one's background (Barrientos, 2004).

Following the Pension Reform Act 2004, Nigeria established a national contributory pensions system for all private and public sector workers. In Chapter 3, I highlighted some of the obstacles impeding the effectiveness of the current national security programme to deliver economic security for older people. This thesis does not attempt to suggest a brand new proposal to further reform pensions in Nigeria, as this is a topic outside the scope of the study. Nonetheless, this thesis is less optimistic about the role of pensions in achieving economic security for older Nigerians in the format prescribed by the draft National Policy on Ageing. It is likely to take several years for the current pension reforms in Nigeria to have any visible impact in providing a decent source of income to present ageing cohorts. Therefore, the government needs to adopt a greater political economy of ageing by incorporating other social protection schemes such as a non-contributory pension scheme.

Non-contributory pensions have the advantage of not discriminating based on labour force participation. The most common form of non-contributory pensions is cash transfers to the elderly. Given the strong evidence in favour of cash transfers in reducing poverty and vulnerability among elderly groups in Latin America and Southern countries of Sub-Saharan Africa (Barrientos and Villa, 2015;Barrientos, 2004, 2007b;Case, 2004), the government should incorporate this aspect to meet the welfare needs of elderly Nigerians who have no source of income of their own and come from very poor households. For this economically vulnerable group, an elderly monthly allowance could be devised which offers a complementary means of achieving the economic society objective articulated in the ageing policy in Nigeria. Under this proposed scheme, a fixed payment (annually adjusted for inflation) could be made automatically upon an individual attaining age of 50 years old; this monthly amount can be determined empirically, and it can be investigated in future research work.

The argument against the universal pension scheme is that it would be too expensive for low-income countries (Kakwani and Subbarao, 2005b). However, in recent years, Nigeria is experiencing accelerating economic growth and is a lower middle income country (World Bank, 2010). This thesis does not dispute that implementing a universal pension has macroeconomic implications. Understanding these implications are the main concern of pension economics (Blake, 2006), therefore, research into the fiscal costs of a universal pension should be commissioned by the government. Alternatively, the minimum of 3% of budgetary allocation which would be legally required by all states to earmark towards the welfare of elderly people can be centralised towards a universal pension scheme rather than decentralising elderly support at the state level.

Given this study's finding of regional disparities as a key driver of economic vulnerability, a de-centralised approach may increase the disparities in the support given to elderly people as there is a risk of the programmes being haphazard and hard to evaluate. This underscores the need for attention to be devoted to proper planning of resources. Based on the findings in the study, a pilot scheme could be implemented in the identified regions of the country—Northeast, Northwest, and Southeast, monitored using a national identification scheme. Currently, Nigeria has a poor national identification scheme (Oshewolo, 2010), therefore, to minimise abuse of the proposed universal pension scheme and to ensure that only eligible elderly people are included, the government can leverage on the use of banking facilities as a verification process. Given the strong regulatory framework of banks, the account opening process tends to be vigorous. This option also has the advantage of improving financial inclusion among older groups.

In the Introduction section of this thesis, I highlighted the dominant advocacy concerns which suggest that older people in high-poverty contexts in SSA remain in the workforce to generate income to prevent economic vulnerability. Based on this study's findings, a sizeable proportion of urban elderly Nigerians work to advanced ages. A significant component of income earnings is based on earnings from a primary and secondary job. Rental income on average was minimal (Chapter 4 and 5). Therefore, a policy to evaluate the impact that remaining in work longer has and identifying what is likely to be suitable employment based on the National Policy on Ageing needs to be considered. These two aspects are important but were outside the scope of this study and the available secondary data source.

Findings from the NGHPS showed that those working in small-scale urban farming tend to have low incomes and have worse health status than their more educated and wealthier counterparts. Suitable employment therefore would need to be self-defined by older people themselves if it is to be empowering. This study recommends that an investigation of the motivations for working in old age and types of work that older people themselves consider to be suitable should be undertaken. This is likely to require a quantitative and qualitative exploration.

This thesis supports the view that old-age employment can improve economic growth and household economic welfare. Based on the findings in Chapter 6, being employed was related to higher levels of consumption allocation at the household level. Therefore, old-age employment can be engendered by the provision of an enabling environment for older people who choose to remain in the work force. For example, ensuring that jobs can be accessed easily by older people who wish to work, taking into the finding in this thesis that older people from the age of 50 years old reported functional problems (Chapter 4). For those in farm employment, the provision of subsidised agricultural technologies can be provided by the government to reduce the manual labour hours for older people in urban agriculture. The findings of health status and consumption allocation highlight that those that work in agriculture are likely to have worse health statuses (Chapter 7). This study's earlier proposal on universal transfers would enable elderly people with serious function problems to exit the labour force before their health begins to fail, which, if not addressed, could lead to catastrophically high health spending, and in worse cases, early deaths.

In addition, many urban elderly Nigerians participated in self-employment. The challenges of doing business or working in the informal sector in Nigeria have been well-documented in the literature. Suggested proposals are already been put forward to make the informal sector more attractive to young people by using creative technologies (Salami, 2013) but not a lot has been

done to retain older people who may want to participate in the informal sector. Older people are more likely to be edged out of work due to the need to gain new skills to compete. In light of this, adult learning and education opportunities similar to the upskilling training drives for unemployed young people in Nigeria can be provided to enable elderly people remain competitive in the work force—whether they are in the informal or formal sector.

This thesis confirms that older people earned less than younger people in urban areas, based on the finding from the NGHPS. These observed differences in earnings based on age, comparing younger non-elderly households to elderly households, can be indicative of loss of earning power in the labour market. However, a long-term view is needed to provide stronger confirmatory evidence. In Chapter 4, I noted and queried the tendency for elderly Nigerians to study in old age rather than to seek work, based on the data in the NGHPS. Assuming that this aspect is verified as accurate following this study's recommendation, the educational aspirations of urban elderly Nigerians have an implication for education policy. Since the introduction of open universities in Nigeria by former President Olusegun Obasanjo, encouraging adult education, and through his 'Universal Basic Education' agenda, adult literacy rates have improved in Nigeria. The tendency to study also implies that elderly Nigerians might be re-training to be more competitive in the labour force or they are returning to education to achieve life-long dreams. A qualitative study of why older people work and their contribution to the economy in urban Nigeria would be useful for any future verification.

Nevertheless, I propose that the government retain its adult education programmes given the low literacy rates among elderly Nigerians based on national indicators (NMEC, 2008), and that more research be done as I noted above. An impact evaluation study would also be useful in understanding whether as a result of such upskilling exercise they have been able to secure decent work or whether it has led to positive health benefits among urban elderly Nigerians. This thesis proposes that more research be taken to understand the needs and contributions of elderly people working in the formal and informal sector. I now examine other findings in this study and suggest policy strategies which are necessary to reduce economic vulnerability.

Campaigns to control fertility: smaller households may not necessarily be better

Household size influences economic vulnerability through consumption allocation; the larger the household, the worse off the household is (Chapter 5 and 6). Family planning practices in urban Nigeria have often been adopted to rein in harmful population growth. Official statistics show that fertility has been reducing over the years. Influencing fertility would further create smaller household sizes at a faster pace, which may result in smaller one-generation households. As Bongaarts (2001) notes, household sizes in urban areas have been decreasing

over the years and are typically smaller in urban areas than those in rural areas. In Chapter 6, I found that smaller elderly households have higher consumption allocations compared to larger and more complex elderly households. More investigation of the consistency of this household size effect over time is required, through a dynamic analysis of economic vulnerability.

Using fertility as a regulator of household size has its drawbacks in terms of its implications for elderly households, In Chapter 5 and 6; I found the number of children reduced labour supply at an individual and household level. As elderly people become frail, children grow and become teenagers and in turn become producing agents themselves. This may produce counteracting effects which balance each other out and which exceeds the purview of a cross-sectional study design. The link between household sizes to labour supply in Nigeria and its implications for economic welfare of urban elderly households requires further investigation.

Promoting health and access to health

The empirical analysis in Chapter 7 regarding the health-related consequences of economic vulnerability has some health policy implications. This study's methodology is very straightforward, and should be easy to replicate for any health policy researchers interested in applying the same methods in their own study. The positive association of consumption per capita and health spending, after adjusting for endogeneity problems, highlights that economically vulnerable elderly are less likely to use health care, prompting some policy implications. Health status was also found to have an effect on economic vulnerability, suggesting that those that are in bad health are likely to be economically disadvantaged. Economic vulnerability (through consumption allocation) is associated with health spending. Those that are economically vulnerable are likely to have less health spending due to a low financial outlay.

In Nigeria, attaining healthcare equity remains a primary objective of Nigeria's health policy (FMOH, 2006). In 2006, Nigeria's health policy reform extended the National Health Insurance Scheme (NHIS) to protect households from high out-of-pocket health payments and to ensure universal health coverage. Currently, only 3% of the population is currently enrolled in the scheme (Joint Learning Network (n.d). This may be much lower given that only 10 cases have health insurance. This thesis holds the view that as Nigeria's NHIS is in its early stages, it is likely to be easier to modify its current provision to include economically disadvantaged elderly groups. Administratively, Nigeria's current NHIS allows for such expansion and integration to deliver benefits for elderly households in Nigeria.

Based on the disparities in health status and health spending, different segments of urban elderly Nigerians would require different public health goals. I propose two approaches to achieving better coverage for elderly people: First, the NHIS's Vulnerable Groups Program could be modified to include elderly people from the age of 50 years old. Secondly, given that a sizeable number of urban elderly are engaged in self-employed work, in the short term, outreach programmes can be instituted to encourage enrolment into the recently implemented self-employed NHIS (Lagomarsino et al., 2012;Joint Learning Network, n.d).

Education levels are clearly influential in engaging people to understand the importance of health insurance and to understand the application procedures involved (Lagomarsino et al., 2012;Chankova et al., 2008). Therefore, community-based representatives can be appointed to help elderly people navigate the enrolment processes in prepayment programmes. Studies on other African countries have shown that targeting vulnerable groups using pre-payment schemes works in reducing the impoverishing effects of health spending (Xu et al., 2007;Dercon, 2002;Lagomarsino et al., 2012). One good example is Ghana, which has now achieved 54% comprehensive health coverage of its population, and only 27% of health spending is financed out-of-pocket (Lagomarsino et al., 2012). This thesis also recommends that as part of the NGHPS, the Nigerian government should strengthen its data generating process to better capture national health coverage data, to aid future research on the impact of national health coverage on consumption allocation in Nigeria.

Gerontologists assert that household resources are shared by the family to meet the needs of elderly members (Okumagba, 2011;Aboderin, 2004). With age, the dependence on family increases for poor elderly people. This overdependence on extended family and friends for health care costs in impoverished urban areas can increase the vulnerability of elderly households (Aboderin, 2004). In a study of elderly Nigerians, Akanji et al. (Akanji et al., 2002) found that many elderly people have to depend on family to bear the burden of medical care when financial resources are low. Therefore, this thesis supports the proposal by leading health advocates in Nigeria for the establishment of a health fund to subsidise health care for elderly people. The health fund financed through tax revenue on luxury goods would support policy efforts to provide healthcare insurance coverage to vulnerable groups including poor elderly citizens in Nigeria (Arin and Hongoro, 2013). Funding membership premiums for elderly people in this way will encourage enrolment and reduce out-of-pocket spending. This approach also avoids the well-documented complications of anti-poverty cash transfers paid to elderly households (Case and Deaton, 1996;Lagarde et al., 2007).

To summarise, using specific findings in the study, this chapter has offered some policy implications. The policy recommendations in this thesis may also apply to other urban African contexts.

The main policy recommendations are as follows:

•   Implement the National Policy on Ageing by prioritising those who are affected by the key drivers of economic vulnerability in this study. Additionally, the government must give serious consideration to planning as well as addressing the identified ambiguities in the policy highlighted in Chapter 3, if success is to be achieved.

•   Commission more empirical research to understand the economic welfare of older people over time. Other economic aspects of their lives are equally important such as work and pensions. Research on the fiscal costs of cash transfers to urban elderly Nigerians is needed to determine the sustainability of a cash-transfer scheme.

•   Increase social security spending for elderly Nigerians by providing universal social pensions to all elderly Nigerians from the age of 50, which can be adjusted with improvements in life spans in the country.

•   Extend the NHIS to include elderly people, and for economically vulnerable elderly Nigerians use the proposed luxury tax fund [(see Arin and Hongoro (2013)] to fund membership premiums of economically vulnerable elderly identified based on the study as those that have no source of income and are less educated. Health infrastructure for older people needs to be improved by incorporating home visits for urban elderly Nigerians with serious functioning problems.

8.3.4 Main Limitations of the Study

In Chapter 4, I highlighted the limitations and strengths of using the NGHPS. The limitation of using a one-period household data, the most well-known is that one cannot make claims to causality. All of this study's results highlighted the correlational relationships between the socio-economic factors and consumption allocation, the main welfare measure of economic vulnerability, at a specific point in time. According to Dercon and Krishnan (1998), one would require panel data to assess economic vulnerability over time. Therefore, this study can be viewed as providing a static view in examining the determinants of economic vulnerability through consumption allocation, and the health-related consequences of economic vulnerability.

Secondly, the study took an urban focus throughout, restricting the study's generalisability to rural contexts. Some may view this urban focus as a limitation, but as the thesis maintained right from the start, the intention of the study was not to generalise to rural contexts. In this sense, the study has achieved its aims.

In addition, and as I have already mentioned, using health dimensions that are based on a one-time period has its limitations in verifying the reliability of the self-reported health measures used in the study. There is likely to be high level of reporting bias amongst elderly Nigerians in their self-report of functioning problems. Although, the study by Baiyewu et al. (1997) corroborates my findings that majority of elderly Nigerians are typically very optimistic about their health based on the low levels of ADL limitations reported based on a different dataset. It is also possible that elderly Nigerians downplay their ADL difficulties as a way to assert their independence and to remain active economically. Nonetheless, the time-period of the NGHPS has limited further verification of the self-reported health measures.

Lastly, in the absence of instrumental variables, significant effort has been taken to reduce the harmful impact of potential endogeneity in the health expenditure-consumption allocation models; but there is still a possibility that some endogeneity may be present.

8.3.5   Gaps and Future Research

This thesis has illuminated key areas that are important to investigating the determinants and consequences of economic vulnerability through consumption allocation as the main welfare measure, amongst urban elderly Nigerians. It has primarily used a secondary household data source and adapted simple econometric models to suit the Nigerian context. It has drawn on concepts in three disciplinary areas—development studies, gerontology, and sociology.

Future research can extend the same methodology to understanding rural elderly Nigerians. In addition, as I noted in Chapter 4, versions of the NGHPS are also being undertaken in Ethiopia, Uganda, Tanzania, Malawi, Niger, and Mali. It would be useful to extend the research to cross-country comparisons using the household surveys.

In addition to the gaps identified in the policy implication section above, there are other possible explanations that I do not consider but are also important. This study's static analysis of economic vulnerability only provides a snapshot view but with time, multi-year period data of this same data source will become available in the public domain, which offers an opportunity for future research to re-examine the determinants of economic vulnerability using a dynamic consumption model, comparing the findings in this study as a useful reference point to identify changes over time. Some factors may vary over time, and some may remain even more persistent in the long term. Therefore, one direction that future research could take is a long-run analysis of economic vulnerability with the availability of longitudinal data from the NGHPS, as well as an integration of the poverty status of elderly Nigerians. Does economic vulnerability (through consumption allocation) lead to further impoverishment of elderly Nigerians?

The thesis has employed time-tested consumption and health models to investigate the determinants of economic vulnerability and its consequences. In doing so, it has drawn on several academic areas to identify immediate determinants. In terms of the consequences of economic vulnerability, there are other possible subjective health dimensions that I do not consider such as subjective happiness or life satisfaction. In relation to happiness or subjective wellbeing studies, to my knowledge, there is no study on elderly Nigerians or even West Africans that links economic vulnerability to elder abuse or life satisfaction. There remains a huge gap in this study's knowledge on these dimensions as possible consequences of economic vulnerability. Does economic vulnerability have an impact on happiness or life satisfaction in old age? These are interesting questions that deserve to be examined, and using welfare

measures such as consumption allocation is suitable for the Nigerian context. In Africa, I found only one empirical study on South Africa (Kingdon and Knight, 2006). One reason for this imbalance in the subjective wellbeing literature on Africa could be due to the availability of data. For example, in China, with the General Social Survey and the General Household Income Project surveys, it is easy explain the growing body of literature in this area, although, even in China, the happiness literature is a relatively new area, in relation to elderly people. One of the very few studies is by (Chyi and Mao, 2012). Nonetheless, the creation of the Gallup World Poll[39] in 2006 offers an opportunity to extend the study of economic vulnerability, as evidenced by the well-cited Gallup World Poll study on the elderly by Deaton (2007).

Throughout the thesis, I presented empirical evidence that work plays an important role in the economic welfare of urban elderly Nigerians. Most elderly Nigerians participate in self-employed and small-scale urban agriculture. Therefore, one avenue for future research is to understand the impact of participating in the informal sector, and its consequences on economic vulnerability of elderly Nigerians. Appleton et al. (2008) is the only empirical study that examines the sensitivity of wage earnings in Nigeria, based on one's occupation and other socio-demographic variables. Although, the authors were not specifically look at the unique self- employment status of elderly Nigerians or its implications for economic vulnerability.

In the second part of the analysis in Chapter 7, I examined the association between health spending and consumption allocation. The empirical analysis focused solely on demand-side effects ignoring supply side effects, due to the lack of data. I do not dispute that supply side effects such as price of medical services, number of hospitals and healthcare clinics, distance to hospital are likely to influence health spending. Future research could incorporate this aspect of the analysis, subject to the availability of data.

In addition, I included gender controls in this study's empirical models. There is scope to examine the relationship between gender and health dimensions, and gender and consumption allocations more robustly in a separate gendered study. Other controls such as education and occupation, which were important on an individual level but not at the household level, demands further investigation of their roles in the economic welfare of urban elderly households. Accessing data on the decision-making and power dynamics within the household may illuminate further the roles that education and occupation play in determining consumption allocations to elderly Nigerians within their households.

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[39] The Gallup World Poll is a World Poll that administered a life satisfaction (happiness) and health satisfaction questionnaire on samples of adults from 132 countries. http://www.gallup.com/home.aspx).

Chapters 5 and 6 confirmed the role of household size and structure as determinants. The household size effect I observed would need more investigation, to understand the economising behaviour that larger households engage in which precludes them from the economies of scale benefits well-known in the literature. I have demonstrated that intra-household approaches suggested using Deaton's well-known demographic seperability criteria and Rothbarth's model are problematic to apply in studying elderly Nigerians. Therefore, in light of the importance of labour in generating income in the household, time allocation models in labour economics literature may be used to understand the role of household size and its composition in determining access and control of household resources.

As I discussed in earlier chapters of this thesis, the family's role in supporting older people through caregiving has been well researched in the African literature. However, the role of the Nigerian government in providing material support, in the absence of caregiving structures, has been less researched. Beyond the occasional unsubstantiated comments that the ageing policy has not been implemented because of a lack of political will on the part of its national leaders (Aboderin, 2010), there has not been a discussion from a political economy perspective. This study has contributed to the literature by discussing the impediments to implementation and successes of the policy from a political economy of ageing perspective (Chapter 3) but there is scope to deepen the discussion by examining the role of other stakeholders. For instance, not much has been done on examining the role and impact of local civil groups who claim to work for the benefit of older people in Nigeria in the policy space. As Estes (1979, p.26) notes, the role that interest groups play in the politics of old age is important but often unclear. This line of enquiry fits within a political economy of ageing perspective and would allow an investigation into successful home-grown approaches to addressing the needs of that older people in Nigeria.

8.4   Final Reflections

At the risk of over-stating the contributions of this study, it would be useful to reiterate its contribution, specifically to the field of African Gerontology. To some degree, this study shares the concerns levied against the advocacy-oriented literature led by the UN and HAI by African gerontologists. In the Introduction section, I highlighted these dominant international concerns and their influence on ageing policy frameworks. This thesis asserts that these dominant international concerns will benefit greatly by extending their concerns from old-age poverty concerns to a consideration of the key drivers of economic vulnerability using robust household data sets in developing countries. As a major step towards understanding the challenges that beset older people, dominant international institutions must take into consideration the inequalities within older populations rather than viewing older people as one homogenous

group. Throughout this thesis, this study of economic vulnerability has demonstrated that even within a shared urban context, elderly Nigerians are a heterogeneous group. A large scale study using secondary data sources can reveal new areas in addressing economic inequalities amongst older people in Sub-Saharan Africa.

The sparse African gerontological literature on Nigeria holds that the main issues facing older people are related to individual and familial factors. Without much success, these studies have attempted to challenge the government's view that old age problems are not just the purview of the family. At the same time, the emphasis on generating quantitative evidence to marshal policy design for elderly Nigerians has been limited due to the failure of these studies to draw on political economy perspectives which provide a more realistic assessment of the primary concerns of the Nigerian government, juxtaposed with policy concerns relating to older people globally.

The African literature can strengthen the potency of its knowledge base by incorporating cross-disciplinary perspectives and improving its quantitative evidence if it is to have greater traction with policy makers. The empirical chapters in this thesis offer new and emerging possibilities in this regard. It is reasonable to think that it may also help engender more cross-national research on older people by quantitative sociologists as more household's datasets becomes available on the selected SSA countries: Nigeria, Ethiopia, Uganda, Tanzania, Malawi, Niger, and Mali, who are all recipients of Bill and Melinda Gates Foundation funding for a GHS-Panel Survey or GHPS over the next few years. Through multi-year consumption data, an understanding of the dynamic nature of economic vulnerability and its exit paths is likely to be more effective in marshalling evidence for policymaking, in the long-run.

Based on the discussion in Chapter 3 and the policy implications sections of this chapter, the choices for the Nigerian government are clear. The government must take a more active role in including the needs of its elderly citizens in the national development agenda. This thesis does not recommend that the government assume all responsibility for its elderly citizens but at a minimum, the government must ensure economic and health security of its economically vulnerable elderly citizens. The government must show deeper commitment by implementing its ageing policy in line with the recommendations of this study.

Later life presents opportunities and constraints to contribute to one's household and society. Therefore, older people must be seen as engines of growth but this must be tempered with the knowledge that some older people are likely to be more economically vulnerable than others. Its policy implementation and programming must be done with an understanding that elderly Nigerians are a diverse group. Its first course of action must be to implement its ageing policy;

and to ensure its success, the policy must be implemented in line with credible research findings on older Nigerians such as those presented in this study.

Secondly, given its track record of policy failures in spite of its well-meaning intentions, this study lends it voice to the need for short and long-term planning to ensure that present and future ageing cohorts are not excluded from development policies. Thirdly, it must clarify some of the highlighted ambiguities in the MIPAA ageing policy framework observed by gerontological experts, Aboderin (2010) and Aboderin and Ferreira (2008), as well as the one put forward by this study in relation to clarifications about income security levels. The policy proposals in this thesis are useful jumping-off points in activating 'conversations' about the economic welfare of older people in Nigeria and in similar Sub-Saharan African contexts.

Finally, if national and international efforts extended towards improving the lives of older people are to be successful in settings similar to this study's Nigerian context, it is evident from the findings in this cross-disciplinary quantitative study, that more evidence on the links between welfare measures and socio-economic and socio-demographic factors will be key to strengthening policy proposals that aim to improve the economic welfare of older people in developing countries.

9. References

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Appendix A: **Using Different Educational Variables**

Educational attainment refers to the formal qualifications achieved. In Nigeria, these are primary, secondary, higher degree, or tertiary (also known as the '6-3-3-4' system). According to Appleton (2000), years of education may be a better measure of education in contexts where grade repetition is common. Nigeria is a classic example of an environment where grade repetition and drop-out rates are common.

Matthew (2015) reviews the basic education literature and presents compelling evidence of grade repetition and drop-out rates in the current educational system in Nigeria. In a study of 242 secondary schools in 2012, high rates of repeaters and drop-outs similar to those in primary schools were found (Matthew, 2015 citing, Akindele 2012). In one study by Adeyemi and Adu (2012) of 520 primary schools and 91,560 pupils who graduated in 2008, high rates of repeaters and drop-outs in the thousands were found.

On the other hand, it is my belief that in terms of employment, educational attainment may be better than years of education when applying for jobs; the paper qualification itself is often the *prima facie* evidence of education, not the number of years. However, in studies on literacy[40], the number of years may be important.

Based on these two possibilities, in this study's modelling exercise, both 'years of schooling' and educational attainment were good determinants of EV, although the educational attainment measure was better in the health models. Therefore, I took a pragmatic approach and utilised the education variables in the respective models based on how well it improved the fit of the model. For example, the model in Chapter 7 included years of schooling, while the models in Chapter 8 on health included educational attainment.

In addition, the NGHPS contained information on educational attainment (S2Q8) and education completed (S2Q7). As completion does not guarantee attainment, I utilised the educational attainment data instead. Moreover, there is a higher risk of selection bias if a respondent is asked about what level of education has been completed. The person may have completed the exams for instance but may not have received results yet; thus, the respondent may be optimistic and self-select as that particular educational level completed. With educational attainment, people tend to have the paper evidence which they are usually happy to display as an achievement. This is not to say that educational attainment may not suffer from self-selection bias. At the point of data collection, one may want to sound more important and self-select into a higher educational achievement category than the one attained. Without control of the data-

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[40] According to UNESCO (2013), literacy is the ability to read or write.

generating process, it is difficult to verify this aspect. Based on the reasons outlined above, the educational attainment and years of education categories are still the most preferred measure for this study.

Educational attainment, S2Q8 in the questionnaire, is made up of 12 categories, including those that report being illiterate. I modified this variable into the four categories: Illiterate, Primary, Secondary, and Higher Degree (B.Sc and above). I present the education of the household head in the two tables below:

Table A-1: Unmodified educational attainment categories in the NGHPS

Educational attainment categories	Freq.	Percent	Cum.
None	211	34.25	34.25
First School	186	30.19	64.44
Middle School	1	0.16	64.6
Vocational	1	0.16	64.76
Junior Secondary	62	10.06	74.82
Senior Secondary	117	18.99	93.81
A level	1	0.16	93.97
NCE/ Nursing	16	2.6	96.57
B.Sc	15	2.44	99.01
Technical/Professional	1	0.16	99.17
Masters	4	0.65	99.82
Other	1	0.16	99.98
Total	616	100	

Note: 183 missing entries. These 183 entries were coded as missing '99'

Source: NGHPS 2010

Table A-2: Modified educational variable used in the study

Educational Attainment (EDUATT)	Freq.	Percent	Cum.
Illiterate	212	34.42	34.42
Primary	187	30.36	64.78
Secondary School	181	29.38	94.16
B.Sc and higher	36	5.84	100
Total	616	100	

Note: 183 missing entries. These 183 entries were coded as missing '99'

Source: NGHPS 2010

Appendix B: **NGHPS Survey Codes and Derived Variables**

presents more information on the variables that are utilised in the model and where they can be found in the NGHPS Questionnaire. Not all variables have been modified, and in the Notes section below, I provide more information on those that have been derived, including the original questionnaire codes.

Table B-1: NGHPS Survey Codes and Modification of Variables, 2010

Dependent and Independent variables	NGHPS code in Questionnaire: PP – post planting; PH- post harvest	Notes
1. Household Consumption/ Consumption per capita	Household Consumption expenditure: 'totexp' in secta_plantingw1	Consumption per capita was derived by dividing household consumption expenditure by household size (Item 9).
2. Total wage income	Derived from PP: Primary job: S3Q21_PP Secondary job: S3Q33_PP In-kind primary job: S3Q23_PP In-kind secondary job: S3Q35_PP	This was collected hourly, quarterly, and annually. This variable was modified by annualising based by scaling up accordingly. For example, if wage income is reported six-monthly. I multiply by 2. Two types of jobs were in the questionnaire: primary and secondary jobs. In-kind payments were also reported. To derive the study's final wage income variable. After annualisation, four aspects were added: primary job wages, secondary wages, and in-kind payments from both primary and secondary jobs.
3. Other income	Rental income: S10Q5_PP	This was asked of the household head concerning all individuals aged 15 years and above. For the purpose of the study, rental income received by the household is a variable of interest. Given the Nigerian context, where savings and investment is still remarkably low, home ownership is often viewed by older people themselves as a source of income-related wellbeing in old age (Adisa et al., 2008).
4. Total household income	Derived	This comprises of the total wage income of all household members, assigned to the household head plus household rental income in Item 3.
5. Barriers to work	S3Q11_PP	Seven choices were given for why the individual was not available to work.
6. Gender	S1Q2_PP	
7. Age	S1Q5_PP	
8. Marital status	S1Q8_PP	

Dependent and Independent variables	NGHPS code in Questionnaire: PP – post planting; PH- post harvest	Notes
9. Occupation by type	S3Q14_PP	
10. Occupation by sector	S3Q15_PP	
11. Employment in the past 7 days	S3Q4_PP	
12. Employment on a farm in the past 7 days	S3Q5_PP	
13. Time spent on collecting firewood	S3Q37_PP	Items 13 and 14 have been added up to give the average time spent on household duties, which has been discussed in Chapter 4.
14. Time spent fetching water	S3Q38_PP	Same as above.
15. Region or Zone	SA-1_PP	This is a household roster question and was assigned to the household head
16. Education	Education completed:S2Q7_PP; Education attained: S2Q8_PP	This was asked for all individuals aged 5 years and above. See Appendix A above for a discussion of the three educational variables utilised in the study.
17. Own Household size	Derived	Added Items (10) – (13) below. The NGHPS has a household size variable but when I added up all members of each household. The household size in the NGHPS and the study's household size were slightly different by an average of 0.53. I deferred to the study's household size in all the analysis.
18. No. of elderly people	Derived	Derived from Age (S1Q5_PP). '1' is assigned if 50 years and above. This is then added up in STATA by household and assigned to the household head.
19. No. of working age adults	Derived	Derived from Age. '1' is assigned if 15 to 49 years). This is then added up in STATA by household and assigned to the household head.
20. No. of young children	Derived	Derived from Age. '1' is assigned if 0 to 14 years. This is then added up in STATA by household and assigned to the household head.
21. Housing tenure choice		
22. Dependency ratio	Derived	Derived from the three age categories. Those aged 0 to 14 plus those aged 50 years above, divided by working age adults.
23. HH is poor (PL = $1.25/day)	Derived	Derived from Consumption per capita and the World Bank's $1.25/day basic needs yardstick
24. HH is not poor (PL = $1.25/day)	Derived	Derived from Consumption per capita and the World Bank's $1.25/day basic needs yardstick
25. Activities of Daily	S4AQ22A – S4AQ34_PH	This section contains questions on health

Dependent and Independent variables	NGHPS code in Questionnaire: PP – post planting; PH- post harvest	Notes
Living (ADL) limitations		limitations and functioning which are further discussed in Chapter 5 and Chapter 7.
26. Other types of illness in the last 4 weeks to the survey date	S4AQ2_PH	
27. Health expenditure per capita	'health' in secta_plantingw1	Health consumption per capita was derived by dividing household consumption expenditure by household size (Item 9).
28. Total HH out-of-pocket health payments (OOP)/ per capita	Derived from S4AQ17_PH and S4AQ18_PH	This variable is an addition of out of pocket health payments on hospital costs and medication costs in the survey year. The OOP per capita was generated by dividing by household size (Item 9).
29. Household drinking water source	S8Q33_PH	
30. Household toilet facility	S8Q36_PH	
31. Household - Electricity	S8Q17_PH	
32. National health insurance contributions	S3Q36_PP	
Source: NGHPS 2010		

Table B-2: Summary statistics of all variables in the empirical analysis, urban elderly households, Nigeria 2010

Dependent and Independent variables	Mean	SD	Min	Max
Consumption per capita	120826.09	149876.76	85.00	1354824.00
Consumption per capita (excluding health expenditure)	85448.02	76592.20	191.19	806389.80
Log of consumption per capita	11.19	1.03	4.4	14
Log of consumption per capita (excluding health expenditure)	11.06	0.79	5.25	13.6
Elderly household head (HH) is female	0.26	0.44	0.0	1
Elderly household head (HH) is male	0.74	0.44	0.0	1
Age of household head	60.83	11.32	18.0	102
HH head is married	0.71	0.45	0.0	1
HH head is widowed or divorced	0.27	0.45	0.0	1
Household head is unmarried	0.02	0.13	0.0	1
HH head is a government employee	0.08	0.27	0.0	1
HH head is a private sector worker	0.04	0.19	0.0	1
HH head is a religious institution worker	0.00	0.05	0.0	1
HH head is self-employed	0.76	0.43	0.0	1
Not easily classified classifications (NEC)	0.12	0.32	0.0	1
HH lives in North Central	0.12	0.33	0.0	1
HH lives in North East	0.08	0.28	0.0	1
HH lives in North West	0.09	0.28	0.0	1
HH lives in South East	0.17	0.38	0.0	1
HH lives in South South	0.13	0.34	0.0	1
HH lives in South West	0.40	0.49	0.0	1
HH head is illiterate	0.34	0.48	0.0	1
HH head has primary education	0.30	0.46	0.0	1
HH head has secondary education	0.29	0.46	0.0	1
HH head has university degree	0.06	0.23	0.0	1
Number of years of schooling	4.84	5.40	0.0	16
Household size	5.13	3.09	1.0	22
Number of elderly people	1.34	0.54	1.0	4
Number of working age adults (15 to 49 years)	2.27	1.99	0.0	16
Number of young children (0 to 14 years)	1.51	1.86	0.0	15
HH head live in owned home	0.75	0.43	0.0	1
HH head lives in employer-provided housing	0.01	0.12	0.0	1
HH head lives in free authorised housing	0.13	0.34	0.0	1
HH head lives in free unauthorised housing	0.01	0.11	0.0	1
HH head lives in rental accommodation	0.09	0.29	0.0	1
HH is poor (PL = $1.25/day)	0.79	0.41	0.0	1
HH is not poor (PL = $1.25/day)	0.21	0.41	0.0	1
Health Characteristics:				
Health expenditure per capita	2347.89	14852.55	0.0	270083
Log of health expenditure per capita	6.82	1.47	3.1	13
Total HH out-of-pocket health payments (OOP)	7208.44	15220.12	0.0	144000
Total HH OOP per capita	7.16	1.44	3.3	12

Dependent and Independent variables	Mean	SD	Min	Max
HH uses pipe-borne water	0.10	0.30	0.0	1
HH uses borehole water	0.42	0.49	0.0	1
HH uses well water	0.21	0.40	0.0	1
HH uses river water	0.23	0.42	0.0	1
HH uses treated water	0.04	0.20	0.0	1
HH has no toilet	0.12	0.32	0.0	1
HH has on-water toilet	0.04	0.19	0.0	1
HH has flush toilet	0.18	0.39	0.0	1
HH has pit-latrine	0.66	0.47	0.0	1
HH has electricity	0.52	0.50	0.0	1
HH does not have electricity	0.48	0.50	0.0	1
HH head has national health insurance	0.02	0.14	0.0	1
HH head does not have national health insurance	0.98	0.14	0.0	1

Note: N =799

Source: NGHPS 2010. All monetary variables are in Nigerian Naira, except the poverty measures where it has been calculated using US dollar figures as specified in the table.